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The Dental Digest

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THE DENTAL DIGEST

VOLUME XXXV DECEMBER, 1929 NUMBER 12

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THE DENTAL DIGEST

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THE DENTAL DIGEST

VOLUME XXXV DECEMBER, 1929 NUMBER 12

Diagnosis, Prognosis and Treatment of Periodontal Disease*

By SIDNEY SORRIN, D.D.S., New York, N. Y.

Chief, Periodontia Clinic, New York University College of Dentistry

Within the last few years, in the light of advanced progress, a more active interest in the treatment of periodontal disease has been manifested by the dental profession. As the various factors bearing on diagnosis, prognosis, etiology and treatment are being linked together, more practitioners are showing a genuine eagerness to help solve the problem of this perplexing disease. Great enthusiasm is observed at all classes and meetings where the problem of periodontal disease is discussed. In view of this interest it has become necessary to organize teaching so that the dentist may be better enabled to recognize periodontal disease in its incipient as well as its advanced stages. Prevention has become the watchword, and it can be practiced only by those who possess a better understanding of diagnosis, prognosis and etiology.

Diagnosis

In order to treat any disease properly, it is necessary to determine its nature. The process of determining the nature of a disease is called *diagnosis*. Diagnosis in periodontal disease cannot be properly determined unless its presence is pointed out and its etiology stressed. Recognition of the earliest signs of periodontal disease is of utmost importance, as this will tend to safeguard the general health of the patient and prevent the possible loss of the teeth.

Before diagnosis can be rendered, several factors must be considered. They are (1) a complete study of the tissues involved, (2) what factors tend to produce disease, and (3) how lesions can be recognized. After a complete study has been made of the tissues involved, it becomes necessary to recognize tissues in health. For example, the marginal gingiva in health possesses a firm texture, pink in color, and completely fills the interdental spaces. It presents also a thin knife-like edge, which has a definite semi-lunar outline.

Factors which tend to produce disease can be ascertained if the proper diagnostic chart is used. Such a chart is employed in the New York University College of Dentistry, and it has been of great aid in tabulating periodontal conditions. On this chart are recorded all systemic and local conditions, thus guiding us as to whether such local factors as traumatic occlusion, marginal irritation, defective con-

* Read before clinics at the meetings of the Pennsylvania State Dental Society, Scranton, Pa., 1929, and the Dental Society of the State of New York, Rochester, N. Y., May 15-17, 1929.

tact points, food impactions, faulty bridgework, margins of fillings, crowns or bands; tooth-brush trauma, calculus or local acidity have been the etiological factors, or whether diet, systemic diseases, disturbed metabolism, gland disturbances, etc., have been instrumental in causing disease. The chart also indicates whether the conditions observed are recession, erosion, gingivitis, alveoloclasia, pericementoclasia or periodontal abscess. In short, the proper diagnostic chart helps to discover all these factors by the thoroughness of attention paid to details.

Fig. 1
Traumatic crescents on the gingival margin of mandibular central incisors.

Yet how can the practitioner chart properly if he is unable to recognize these lesions? Harold Keith Box of Toronto has outlined some diagnostic signs among which are (1) traumatic crescents (Fig. 1), (2) congestion of marginal gingivae (Fig. 2), (3) recession of marginal gingival line (Fig. 3), (4) McCall's festoons (Fig. 4), (5) Stillman's clefts (Fig. 5), (6) shortening of the crest of the septal gingiva (Fig. 6), (7) absence of stippling, (8) increased depth of gingival crevice,

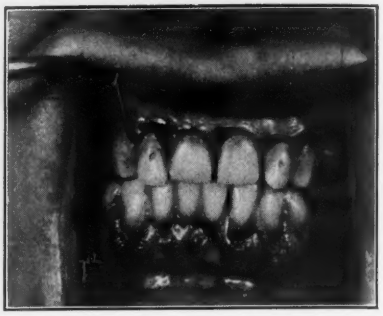


Fig. 2
Congestion of the entire marginal gingiva.

(9) epithelial nodules, (10) mobility of varying degrees, (11) various changes taking place in alveolar bone, (12) distended veins in the alveolar mucosa, giving rise to a purplish color arising in the septal gingiva and traceable for a considerable distance into the alveolar mucosa, (13) proliferative gingivitis, (14) linear depressions.

Diagnosis depends for its success not only upon the recognition of subjective

Fig. 3
Recession of the marginal gingival line.

and objective symptoms but also upon a knowledge of mechanical relationships and radiographic diagnosis. Occlusion has been discussed so often that I shall confine my remarks to x-rays. (It suffices to say, however, that grinding of the occlusal surfaces is a difficult process and can be accomplished only after a thorough study of the subject. Study models should be made, for much harm may result from inaccurate grinding.) When making a diagnosis from a radiogram, the chart should be referred to constantly. The

Fig. 4
McCall's festoons about the mandibular incisors and cuspids.

x-ray, together with an accurate clinical history, makes an ideal method for determining the correct diagnosis. Around the normal tooth, under the x-ray, we see a very thin dark line and beyond this a white line called the lamina dura—a layer of relatively dense bone which constitutes the inner wall of the alveolus. Beyond the lamina

Fig. 5
Stillman's clefts especially noticeable on mandibular central incisors.

dura the bone is of more cancellous structure. Among the many periodontal conditions revealed are (1) early alveolar absorption, (2) residual infection, (3) pericemental irritation, (4) rarefaction, (5) bone condensation,

Fig. 6
Shortening of the crests of the septal gingiva of the mandibular incisors. Note epithelial nodule between maxillary left cuspid and lateral.

(6) resorbed roots, (7) rarefying pericementitis fibrosa, etc. Many failures in diagnosis have resulted from either poor radiographs or inaccurate interpretation. I shall cite some outstanding errors:

(1) Frequently the anterior palatine canal is superimposed over the apex of the central incisors and casts a dark shadow which is misinterpreted as rarefaction. The same error is made when the maxillary sinus is superimposed over the lingual roots of bicuspids and molars.

(2) The mental foramen is often superimposed over the apex of the mandibular bicuspid.

(3) Interdental canals between mandibular anterior teeth are often interpreted as areas of bone destruction. To quote Hershfield—"Interdental canals are radiolucent streaks which are found on either side of the mandible between the central and lateral incisors, where they start variously at some point near the apical half of the roots. In some cases they run quite far down, but in others they fade out rather abruptly only a short distance beyond the apices of the teeth. The upper end of the radiolucent line is usually quite distinct and may be seen to terminate occasionally in a circular shadow caused by the canal's foramen, which is situated in the lingual alveolar plate. The canals vary radiographically in different individuals in length, width and degree of radiolucency. Very often misinterpretation results in negative prognosis and unnecessary extraction of the teeth. This canal has a definite function that it performs, in that it transmits well-sized blood-vessels through which the inferior dental and sublingual arteries anastomose."

Prognosis

If a careful diagnosis is determined, a logical and scientific prognosis can be rendered. By prognosis is meant the probable cause and result of the disease. This depends upon many factors which may be observed clinically and radiographically.

(1) Clinically.

- (a) Age of the patient. Very often an individual of advanced age will show normal physiological bone absorption and wear of tooth structure. This must not be confused with pathologic conditions.
- (b) Occupation.
- (c) Tone and vitality of periodontal tissues.
- (d) If tooth is securing adequate and approximal support from adjacent teeth.
- (e) If tooth can be properly scaled and curetted.
- (f) If occlusal equilibration can be attained.
- (g) The vitality of pulp (non-vital teeth are poor risks).
- (h) The patient, his habits and ability to cooperate.
- (i) If the tooth can be depressed in the socket and moved from side to side, prognosis is unfavorable.

(2) Radiographically.

- (a) Where roots of teeth are abnormally close together, prognosis is unfavorable.
- (b) Where the bifurcation on posterior teeth is involved and

healthy tissue cannot be induced to regenerate, prognosis is negative.

(c) Bone condensation which has completely surrounded the root would render prognosis negative.

(d) Rarefied areas about the apices of teeth very often will give rise to a negative prognosis.

Prognosis may be favorable in one instance and unfavorable in another. This depends upon the control of all factors involved. Failure to secure tightening of the teeth after a complete rest is an indication of cementum absorption, pulp infection or extreme loss of bone. Any one of these will render prognosis negative. The amount of pus has little relationship to the prognosis of the case. Usually after occlusal equilibration and instrumentation the discharge of pus will cease.

TREATMENT

One of the outstanding factors responsible for failure in treatment is a lack of confidence in results. Only after one has learned the fundamentals and practiced them can one become convinced of the fact that the disease is curable. Success in treatment requires much patience and particular attention to all details. In the treatment of more advanced cases care should be taken not to attempt the impossible. When the general health and resistance are low and the condition is well advanced, all seriously affected teeth should be extracted before treatment is begun. After occlusal equilibration is established, the tooth tightens, pus stops flowing, and there is improvement in the contour and texture of the gingival tissue. After gingival massage and instrumentation pockets should close.

To be completely successful, then, the following should take place:

(1) The infection should be eliminated.

(2) The destruction should be checked.

(3) The teeth should become firmer.

(4) Pockets should close up.

(5) Tissues should take on a healthy color.

Some are satisfied when the pus flow ceases and the gingival tissue is restored to normal. Very often a quick result is observed after the use of medication and removal of deposits, but further observation reveals the fact that the destructive process continues.

Treatment based on recent findings will result only in success and will depend in a large measure upon the control of the three fundamental factors upon which treatment is based: (1) the elimination of the cause, (2) proper instrumentation to remove the effects, and (3) stimulating of the tissues and raising of resistance by means of the toothbrush.

There are some dentists who still believe that periodontal disease cannot be cured, and the reasons are probably due to any of the following:

(1) Incorrect and inaccurate case records.

(2) An inability or unwillingness to recognize oral lesions.

(3) Incorrect occlusal adjustments.

(4) An unscientific use of instruments.

(5) Unnecessary use of drugs.

(6) Inability to teach patients a proper method of gingival stimulation.
(7) Improper attitude of the dentist toward his work.

It is my sincere hope that in this paper I have contributed some information which may be of assistance in helping fellow-practitioners to solve many of their problems in periodontal disease.

269 West 72nd Street

[ROENTGENOGRAPHIC INTERPRETATION]

Pathologic conditions which cause radiolucent changes in the roentgenogram are pericementitis, periapical disturbances, diffuse periapical absorption, cysts, osteitis, necrosis, osteomyelitis, alveolar absorption and caries. Conditions which produce radiopaque changes are osteogenesis, sclerosis, hypercementosis, pulp-stones, deposits of calculus in ducts of glands and sinus involvement. The ability to recognize the roentgenographic appearance of all these conditions is essential to complete a correct oral diagnosis.

—MILLER.

Ultra-Violet Rays In the Treatment of Pyorrhea and Other Mouth Lesions

By B. BARRYMORE MARCO, D.D.S., New York, N. Y.
Formerly Consultant at Montefiore Hospital

Pyorrhea, the much discussed mouth disease, is either a local or a constitutional condition. Local factors include traumatic occlusion, badly fitting bridges, crowns, fillings, tartar accumulation and irregular teeth. Constitutional factors may include nephritis, diabetes, tuberculosis, syphilis, intestinal disorders, etc.

We know that pyorrhea and associated mouth infections are held responsible for many diseases such as infective endocarditis, gout, nephritis, anemia, tonsillitis, pernicious anemia, septic infection of joints, rheumatic conditions, ulcer of stomach and many kindred diseases too numerous to mention.

Statistics show that most cancers occur in the alimentary canal, and most people suffering from cancer in these parts have advanced pyorrhea alveolaris.

And now that we know what infection can do, we should strive in every way known to science to overcome it. By infection we mean the manifestation of disease caused by the entrance of microparasitic organisms into the body and their multiplication and action therein. In attempting to isolate the bacteria in pyorrhea cases it has been found that these are mostly mixed infections, principally streptococcus but also staphylococcus, usually of the aureus type; pneumococcus, micrococcus catarrhalis and the influenza bacillus. I am inclined to believe that in severe cases pyorrhea is constitutional, for the disease seems to increase.

It is doubtless true that American vitality is gradually lowering, not so much because of defective prenatal development but rather because of habits of living that have developed with the refinements of civilization, notably the excessive use of alcohol and tobacco, excessive protein fare, and the lack of active exercise necessary to oxidize the food and carry off the accumulated poisons. Thus the average man who labors all day in the sedentary life of an office lays a heavy strain on his liver and kidneys by overloading the stomach three times a day with food that gives the teeth and gums little work to do, takes no exercise and so fails to dispose of an abundant quantity of waste. Through the immediate action on the vascular system of irritant poisons formed in the intestines overeating creates hypertension, and this is the all too frequent cause of arterial hardening, creating any number of diseases.

It must not be forgotten that, while general systemic conditions may cause mouth infections and alveolar disease, alveolar infections may be the cause of chronic systemic diseases. During the process of pyorrhea alveolaris all the stages of inflammation, diseased bone and the overlying tissues may be found that are present in other diseased bones

of the body. However, in this case inflammation of the bony socket is perpetuated by the calcic deposit about the teeth or by bacterial infections which find lodgment in the cancellous bone, much of which may be destroyed.

Before going into the therapeutic uses of the ultra-violet ray it would be well to understand a little about light. Physicists have proved that light consists of waves and vibrations through the ether which travel through space at the rate of 186,000 miles per second.

Light was found to be composed of different wave lengths, which caused different colors.

White light is composed of five primary colors, red, green, violet, yellow, blue, together with many secondary colors.

Beyond the red end of the spectrum are invisible rays, viz., infra-red, Hertzian rays and wireless rays.

At the violet end there are invisible rays, viz., ultra-violet, x-rays, gamma rays and Milliken rays.

The entire band is known as the spectrum, which is divided into divisions known as octaves, an octave being the light visible to the eye. The complete spectrum consists of fifty octaves.

Angstrom divided these wave lengths into units for measurements and called them Angstrom units. An Angstrom unit is equal to 1/10,000 of a micron or 1/100,000,000 of a centimeter. The abbreviation for an Angstrom unit is A.U.

To produce a spectrum, one has to refract a narrow beam of light through a quartz prism. The solar or complete spectrum gives the complete range of wave lengths. The spectrum for therapeutic purposes may be divided into three general divisions, viz., the infra-red band, the visible band and the ultra-violet band.

The penetration of luminous light is the greatest, next the infra-red, and then the ultra-violet. Wireless rays are said to penetrate anything.

It has been demonstrated by leading bacteriologists that the ultra-violet ray will destroy bacteria, even the spores of bacillus anthracis, which cannot be destroyed by boiling water under normal pressure, and can also cause a fixation of various minerals such as calcium, iron, phosphorus and iodin.

Granting the pyogenic, the amebic or the spirochetic theory, any one of which might be the cause of pyorrhea, it can readily be seen that the ultra-violet ray, which is capable of destroying the most virulent germ in from six to twenty-five seconds, would be the logical treatment.

Before treating the patient it would be well first to get a complete history as to past illness, etc. Should it be a case of pyorrhea, first determine whether it is local or constitutional. If local, due to traumatism, correct that fault and then look at the bridges, fillings and crowns that may be impinging on the gums, causing irritation. When these faults are corrected, treat the mouth with the ultra-violet ray. If constitutional, determine whether there is a kidney or diabetic condition present, for in such cases, although you may be able to assist very materially, you cannot effect a cure without the cooperation of the physician.

Whether the condition be local or constitutional, the mouth must first be put in order before treatment with the ultra-violet ray. The teeth should be

thoroughly scaled, ragged and crowded fillings impinging on the gums should be corrected, and badly fitting crowns and dentures removed. Next spray the mouth with a saline solution. I use one teaspoonful of sodium perborate in a glass of warm water and then wipe around the necks of the teeth with dry cotton swabs.

At the first treatment I usually give about eight minutes of treatment with the ray and then dismiss the patient, making an appointment the next day to check up the reaction, which must show a first-degree erythema. If it does not, I repeat the treatment for ten minutes. I follow up the treatment every three days, increasing the treatment until twenty minutes is reached, and I maintain that exposure until the case is cured.

In order to understand erythema, I will describe the three degrees:

First Degree. A mild blush appearing about four hours after treatment and disappearing in about the same time after the maximum has been reached. This is best for use in dentistry.

Second Degree. A marked reddening of the tissues just short of a blister and used in certain local infections of localized area. It appears about four hours after treatment, requires about twenty-four hours to reach the maximum and then gradually disappears, leaving considerable pigmentation or tanning, a little annoying to the patient for a few hours only.

Third Degree. A blister and should be little used, certainly not in the mouth. It is very painful, requires from five to seven days for this reaction to clear up, and sometimes leaves a bad cosmetic effect.

I expose only the six anterior teeth, upper and lower, at the first sitting, then the posteriors on each side. Later, when the gums can stand it, I give a full mouth exposure.

A check must be kept on all cases, since some people are more susceptible to the ultra-violet than others, blonds more so than brunets.

I have divided patients into certain temperaments and have listed them as:

(1) Nervous — usually blonds, slender and frail.

(2) Sanguineous — the full-blooded type, usually sandy-haired.

(3) Bilious — brunets, hardy, well-built types.

(4) Lymphatic — dark, heavy-set, slow-moving, often dull.

I have used the ultra-violet successfully in cases of gingivitis, septic and dry sockets, inflammation associated with unerupted teeth, post-operative pain after extraction, and neuralgia. It is said that it is of great assistance in clearing up infected teeth in conjunction with root-canal treatment, also in healing up fractures and in trench mouth. It has also been demonstrated and proved efficacious in tuberculosis, anemia, hay fever, asthma and many other disorders.

Under ultra-violet radiations it has been found that various domestic animals have increased in growth, as well as in the fixation of calcium, phosphorus, iron, etc. A cow fed on rayed hay produces milk rich in vitamins and in calcium-fixing properties. Hens that have been rayed produce eggs rich in vitamins. A drug called ergosterol after being rayed is endowed with the most remarkable property of preventing and curing rickets in infants

and animals when given infinitesimal amounts.

And now, after treating pyorrhea for many years, studying and following up all the new theories, treating some with success and others without, I am free to confess that with the ultra-violet ray at my command I have obtained much better and quicker results than by any other method. Therefore I feel free in recommending its use to my brother dentists as a great assistant in their work.

124 West 73rd Street

[RESPONSIBILITY OF THE DENTIST]

In the light of the facts it seems clear that the dentist is under no legal obligation to make a physical examination of a patient before administering an anesthetic, and that if the information gained by the customary and usual questions asked a patient relative to his or her physical condition does not disclose anything that should put a reasonably prudent dentist on guard, the fact that injury results from the anesthetic will not render the dentist liable for malpractice on the grounds of his failure to make a physical examination before administering the anesthetic.

—CHILDS.

Articulators In Theory and Practice*

By W. A. SHARP, D.D.S., Des Moines, Iowa

Theory is a generalization of the principles on which practice proceeds.

Establishing balanced occlusion as a means for maintaining balanced equilibrium was in no way a problem of nature. If from birth to adult life every part is brought into normal function, development will be normal to that individual. It is very apparent that nature intended us to be alike, but not identical, in type and development. In the normal human masticatory apparatus nature has followed her usual plan of creating us bilaterally symmetrical. The teeth typical of each individual are perfect rights and lefts, located to the right and to the left of the sagittal plane. The component parts of the right side and the component parts of the left side of every normal adult masticatory apparatus should be equivalent in arrangement and development. In other words, they should be balanced. If the normal forces of occlusion are not interfered with during dentition, every adult should have a beautifully arranged set of teeth.

We judge central occlusion to be normal (1) by maximum occlusal contact, (2) by normal proximate contacts, and (3) by normal proximate embrasures and spaces. Each tooth has a definite function to perform, and its *form* determines its *position* in the arches. We must therefore conclude that the form of each individual tooth plays its part in establishing the line of occlusion. Each tooth, with the exception of the mandibular centrals and the maxillary third molars, makes contact with two opposing teeth. Therefore any line of occlusion established for one tooth will affect the line of occlusion of two opposing teeth. It therefore follows that although each tooth functions as a unit in conjunction with the opposing teeth, all teeth must be arranged upon the same coordinating line of occlusion.

Angles defines the line of occlusion as follows:

"The line of occlusion is that line with which, in form and position according to type, the teeth must be in harmony if in normal occlusion."

All recognized authorities agree with Angle, for they know that we have several normal types of teeth and, as a consequence, *different magnitudes of normal occlusal curves.*

With the teeth in central occlusion the condyles are seated in the fossae. During the masticating function the mandible must be moved into different positions. In order that these movements may be made when the teeth are or are not in contact, a means must be supplied for guiding these movements, namely, the guiding influence of the condyle paths. In order that the teeth may be freed from contact and again brought into contact in another position, nature has supplied us with a sliding hinge—the temporomandibular joint. The hinging or opening component will be variable, depending

* From a clinic presented at the Iowa State Dental Society, May, 1929.

upon the act performed. The sliding factor or condyle path inclination is constant and is established in harmony with the line of occlusion. The line of occlusion and the condyle paths will therefore all be affected if the normal forces of occlusion are interfered with.

Advocates of the spherical theories and modifications of these theories claim that the teeth must be aligned along the arc of the mandibular movement. Yet they recognize the fact that these movements are impossible unless the teeth are free from intercusping. In central occlusion the cusps are interdigitated. This is made possible by the depth of the sulci upon the occlusal surfaces of opposing teeth and the embrasures between the teeth. During movements balanced articulation is not established by the tips of maxillary cusps making contact with the tips of mandibular cusps. Some cusps pass into the embrasures between opposing teeth, some cusps follow the sulci in opposing teeth, while others move diagonally over the inclined surfaces of opposing teeth, their exact movement depending upon the inclination of the condyle paths and the rotation centers for the movement.

During movements away from central occlusion every mandibular tooth will move away from the theoretical sphere or any other established line of occlusion. The magnitude of this opening component movement will depend upon bite depth, tooth form, arch form, condyle paths, and the rotation centers for the movement. We must therefore conclude that the movements away from (opening component) and back to (closing component) central occlusion are the vital movements.

During articulation two factors establish this opening component, the guiding influence of the condyle paths and the controlling influence of the inclined planes of the teeth. The guiding influence of the condyle paths is always present in edentulous cases as well as in cases possessing a full quota of natural teeth. Whether this influence is exerted by direct contact as a lever or by conveying impulses to the muscles, causing them to move the mandible in such a manner as to eliminate leverage at the condyles, makes no difference. The guiding influence of the condyle paths is always present. In all work requiring the use of an articulator we must register and record the condyle paths as they exist in each individual case. These records must be used to adjust the articulator to produce condyle paths equivalent to those of the patient. As to the controlling influence of the teeth that we supply, we can make no definite statement relative to any alignment that will establish normal balanced articulation, for we have no standard tooth forms nor have we as yet established a definite relation between the intimacy of tooth contact and efficient masticating function.

Before starting any prosthetic restoration we should have fixed in our minds a mental picture of normal central occlusion. If a set of artificial teeth, set up upon an articulator following this conception of normal central occlusion, does not present contact in other occlusions in accordance with our generally accepted conception of balanced occlusion, there are only two methods by which this balance may be established. One is to mutilate the inter-

fering teeth by grinding, and the other is by changing the line of occlusion. I prefer to preserve the original tooth form and change the line of occlusion.

We should also make this simple observation in all cases. A plane resting upon the mandibular centrals and the disto-buccal cusps of the mandibular second molars will usually be found midway between the maxilla and the mandible in the incisor and the molar regions. The occlusal curve or line of occlusion should lie below this plane.

The general conception of balanced occlusion seems to be an arrangement of opposed masticatory surfaces of the teeth that will maintain maximum contact during articulation. Usually such intimacy of contact is secured by grinding down the normal tooth forms. Until we have a better understanding of the significance of cusps and the relative value of deep-bite teeth, medium-bite teeth and shallow-bite teeth to efficient masticating function, one theory will be as good as another. However, if we hope to solve the problems of normal occlusion, we must study normal tooth forms and their function before wear has taken place. Therefore I have confined myself to a consideration of unworn normal tooth forms, as described in Black's *Dental Anatomy*.

It is easy to see that in normal occlusion there must be harmony between the condyle paths and each and every one of the opposed controlling inclined planes of the teeth, and that the coordinating line of occlusion will be a result of this harmonious relation. We may therefore conclude that in a normal case harmony and compatibility exist between the controlling influence of the masticatory surfaces of the teeth and the guiding influence of the condyle paths. The magnitude of the coordinating line of occlusion will be variable, depending upon arch form, tooth form and condyle paths. Therefore any technic, such as milling in bite rims, using a curved steel plate, or the caliper method employed in an effort to predetermine a base line of occlusion either for an edentulous case or for an orthodontia case, should be condemned as being unscientific.

With this brief generalization of the theories of occlusion let it be sufficient to state further that in order to present contact in accordance with our generally accepted laws of balanced occlusion opposing teeth in central occlusion should present maximum occlusal contact, and in protrusive and lateral occlusion opposing teeth should present contact in at least three widely separated areas or points. Whether or not greater intimacy of contact should be present in protrusive and lateral occlusion has not as yet been determined from the standpoint of masticating efficiency.

Let us further state that during the masticating function the mandible must be moved into different relations. Let us state also that in order to avail ourselves of the convenience of an articulator we must by some means register and record these mandibular relations, and the record obtained must be used to adjust the articulator to maintain equivalent relations.

Our present difficulty lies in our inability to record condylar movements. We can record only fixed positions, such as central, protrusive and lateral. All articulators arbitrarily establish

condylar and mandibular guidance between these fixed recorded positions. The sole purpose of an articulator is to support maxillary and mandibular casts in the same relation to each other as are the parts in the mouth of which these casts are replicas or models. The value of one articulator as compared with another articulator is determined by the ease and accuracy with which it may be adjusted to support the casts in all equivalent relations that may be registered and recorded upon the patient. Most articulators are constructed in accordance with the inventor's conception of mandibular movements from one occlusion to another occlusion, plus convenience.

It is not my intention to outline any technic for registering and recording condylar and mandibular relations. You should know why such records are necessary. In the "object lesson" illustrated by the photographs I have endeavored to supply you with a means whereby you may observe, compare and determine the relative value of many of the factors responsible for our generally accepted laws of balanced occlusion.

For this object lesson I selected artificial teeth that are a good imitation of natural teeth. I next set them up in the articulator, arranging them to present their greatest intimacy of occlusal contact in central occlusion. I then moved them alternately into protrusive, right lateral and left lateral relation, adjusting the condyle paths in these relations to permit the teeth to present maximum occlusal contact in all relations. The final adjustment resulted in a condyle path of 10+ for the right side and 15+ for the left side. I then ground the teeth to present maximum occlusal contact in all intermediate relations. It took very little grinding to accomplish this end, and the teeth are still a good imitation of natural teeth. Whether or not such close intimacy of contact is necessary or desirable has not as yet been proved from the standpoint of efficient masticating function. I ground them to close contact in order that you could more easily detect any difference that might exist between the different mounts.

The photographs show this same set of teeth mounted in four different positions upon the same articulator. With the exception of the group showing the comparative relations, the first position (Mount No. 1) will be found in the upper left-hand picture, the second position (Mount No. 2) in the upper right-hand picture, the third position (Mount No. 3) in the lower left-hand picture, and the fourth position (Mount No. 4) in the lower right-hand picture of each group of photographs.

The positions of Mounts No. 1 and No. 3 were established in accordance with statistics compiled by the late George H. Wilson after measuring three hundred mandibles at the Smithsonian Institute at Washington, D. C. The smallest mandibular triangle was a scalene triangle measuring: base (condyle to condyle) 81 mm., longest side (incisor to condyle) 89 mm. This small triangle presented the greatest deviation from bilateral symmetry of any measured. This deviation is slight, for the perpendicular bisected the base 6.55 mm. from the center of the base.

The largest triangle (white race) measured: base (condyle to condyle)

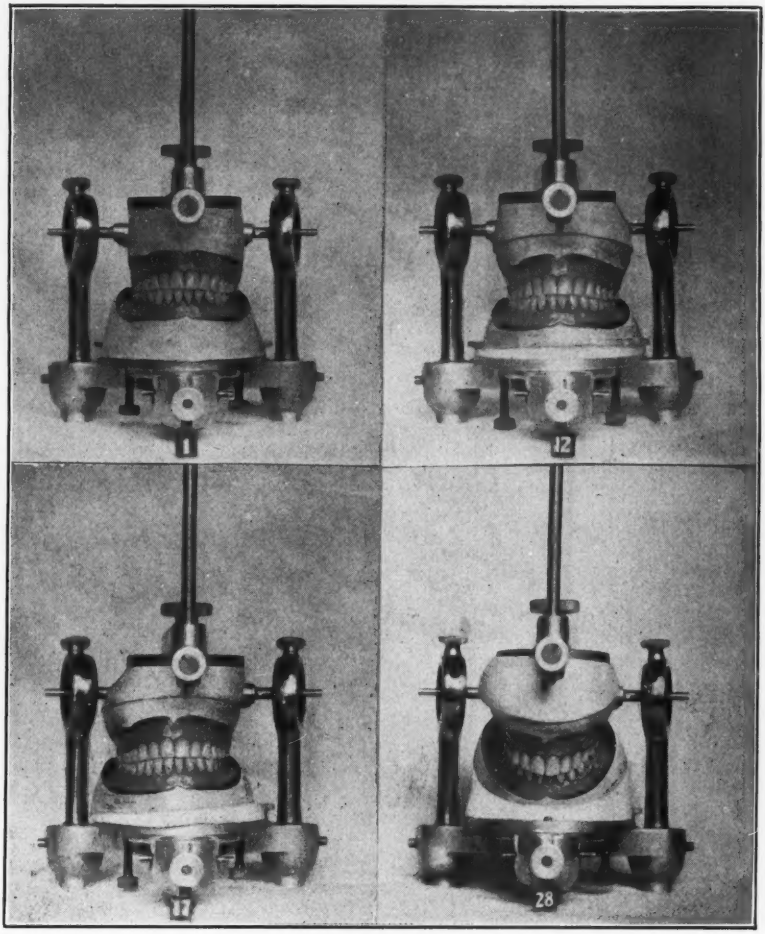


Fig. 1
FRONT VIEW.

1—Mount No. 1.
12—Mount No. 2.
17—Mount No. 3.
28—Mount No. 4.

104 mm., sides (incisors to condyles) 114 mm.

The dimensions of the smallest triangle were used for Mount No. 1. The dimensions of the largest triangle were used for Mount No. 3. In its relation to Mount No. 1 Mount No. 3 was moved forward, rotated and lowered more upon the right side than the left side (Fig. 6—Nos. 8, 9, 11).

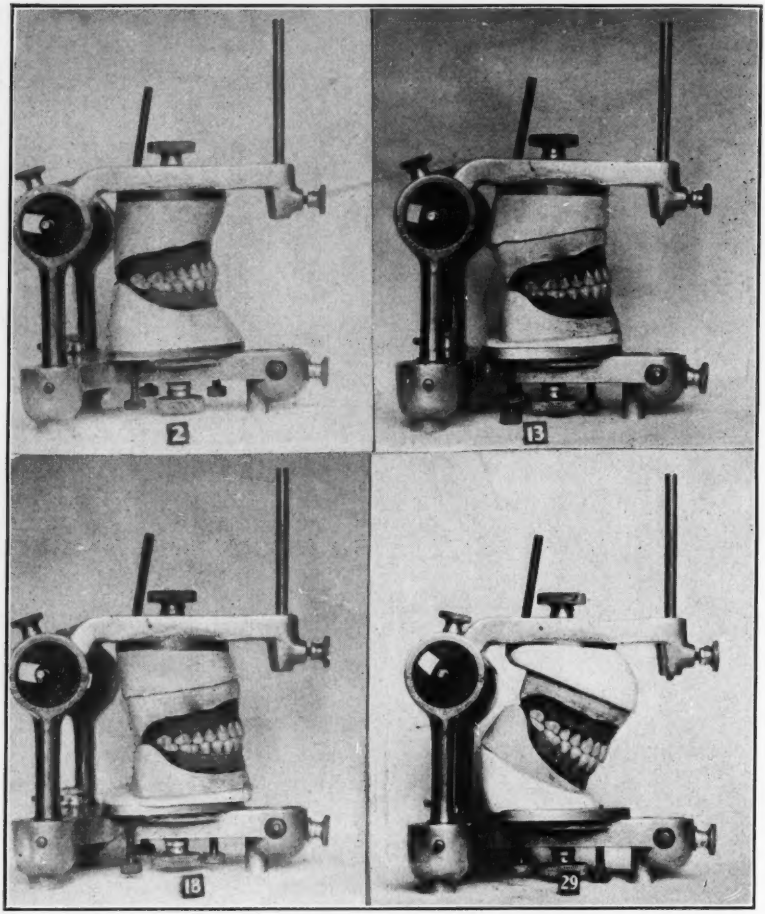


Fig. 2

WORKING SIDE.

2—Mount No. 1.
13—Mount No. 2.
18—Mount No. 3.
29—Mount No. 4.

Mount No. 2 was moved downward 6 mm. and forward 6 mm. from the position of Mount No. 1 (Fig. 6—No. 10).

The condyle paths were not changed, but remained the same for these three mounts. Yet in all intermediate positions the teeth presented a balance practically identical, as shown in the photographs.

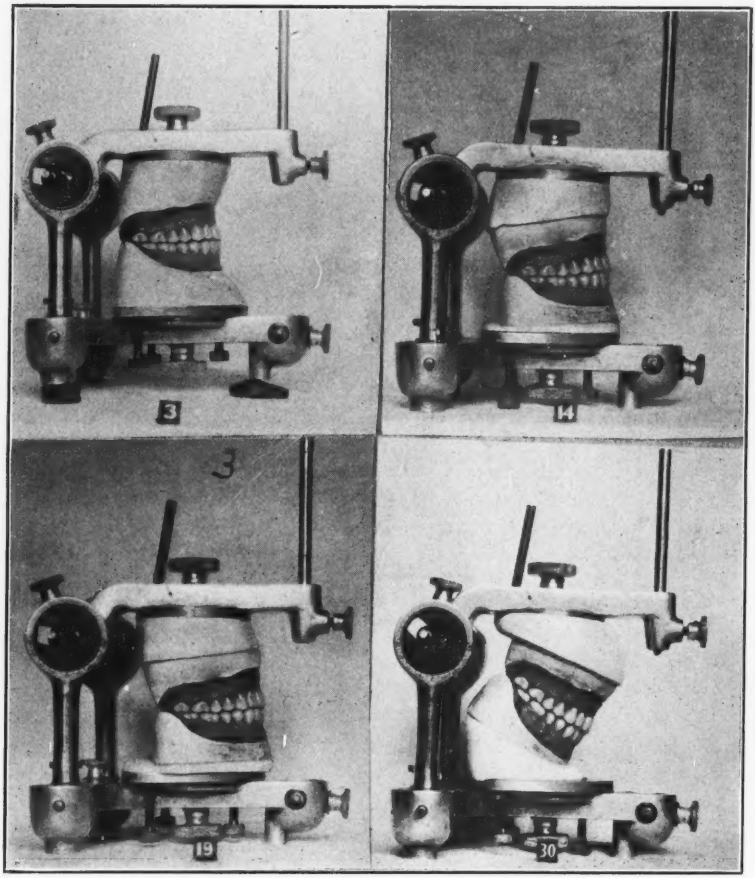


Fig. 3
BALANCING SIDE.

3—Mount No. 1.
14—Mount No. 2.
19—Mount No. 3.
30—Mount No. 4.

For these three mounts the occlusal plane was not changed more than five degrees from horizontal (Fig. 5—Nos. 6, 16, 21). If the plane had been changed more than five degrees, the balance would have been interrupted.

The occlusal plane of Mount No. 4 forms an angle of 40° with the horizontal, as established for the other mounts. By simply increasing the condyle paths by 40° the teeth presented a balance practically identical to the other three mounts.

By Mount No. 1 I have endeavored

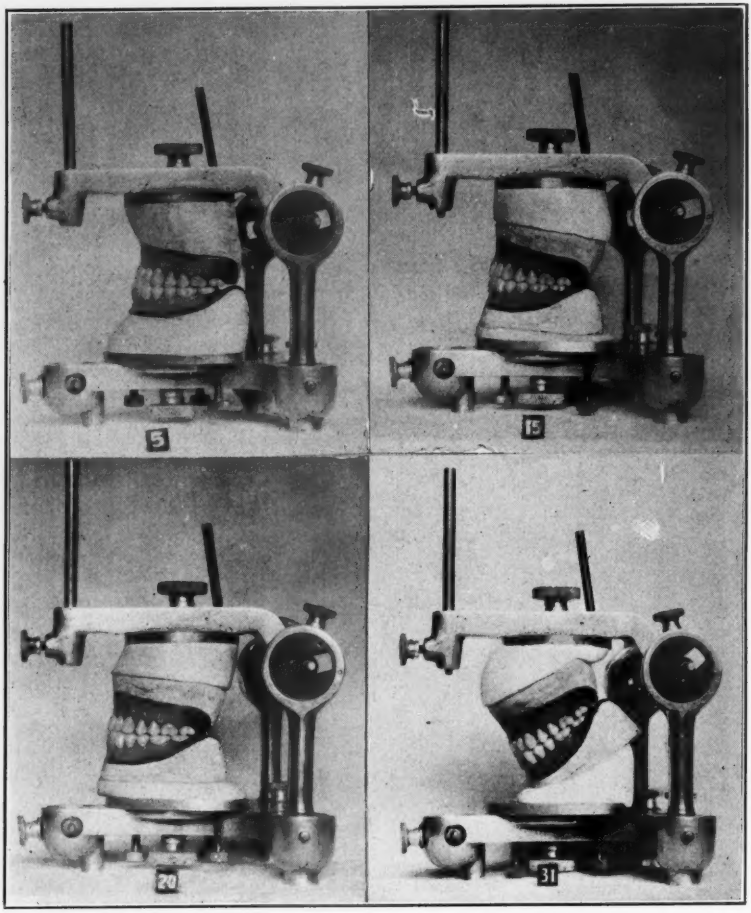


Fig. 4

INTERMEDIATE RELATION.

5—Mount No. 1.
15—Mount No. 2.
20—Mount No. 3.
31—Mount No. 4.

to demonstrate that a forward movement away from central occlusion is normal and compatible to normal tooth forms, that a straight condyle path will not interrupt balance of artificial teeth that are a good imitation of natural teeth, that the line of occlusion is established by the type or form of the individual teeth, and that the condyle paths are established in harmony with tooth form. Therefore the line of occlusion is a result of nature's

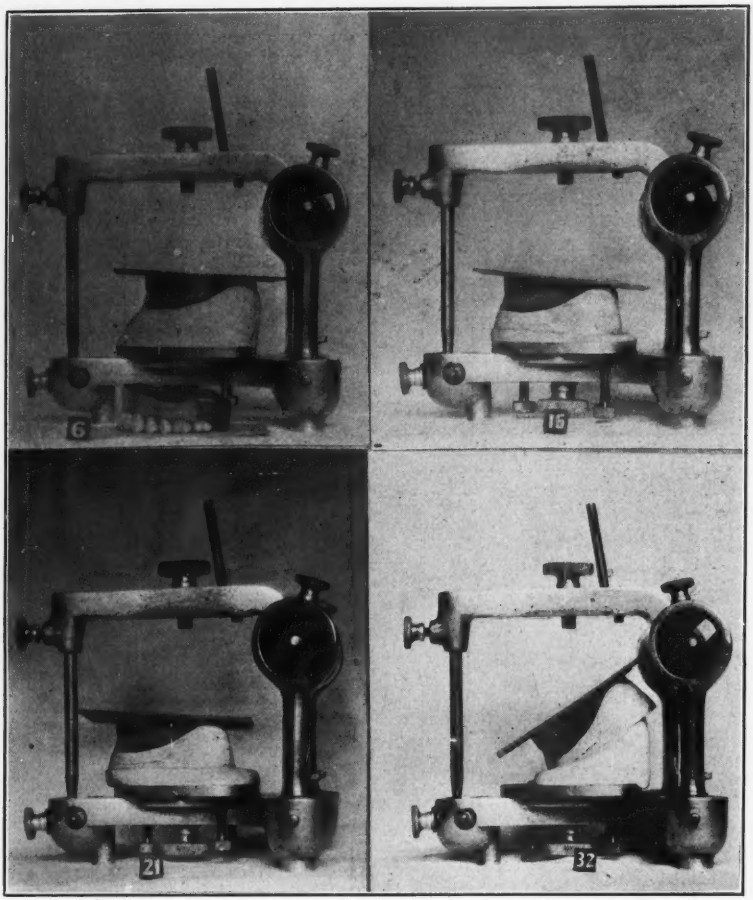


Fig. 5
OCCLUSAL PLANE.

6—Mount No. 1.
16—Mount No. 2.
21—Mount No. 3.
32—Mount No. 4.

plan in establishing compatibility between lines of movement established by the condyle paths and lines of movement established by the inclined planes of the teeth.

By Mount No. 2 I have endeavored to demonstrate that the relation of the occlusal plane and the line of occlusion may be lowered in their relation to the condyles without interrupting the balance. Note that the sweep of the occlusal curve now passes below the condyles.

By Mount No. 3 I have endeavored

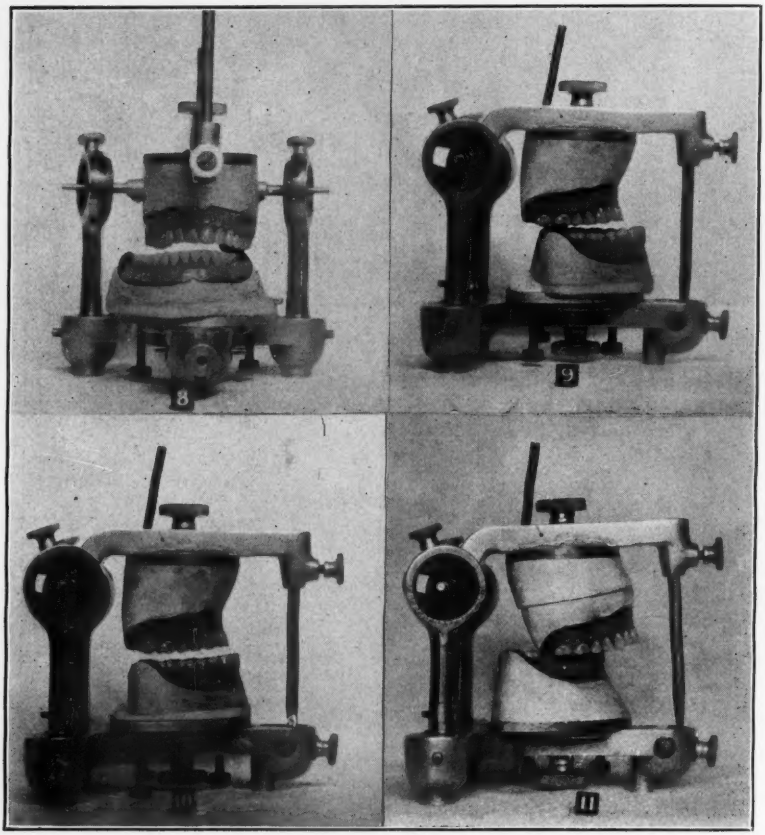


Fig. 6
COMPARATIVE RELATIONS.

to demonstrate the relative importance of the condyle path inclination, the positional relation of the teeth to the condyles, the location of the rotation centers, and the position of the line of occlusion.

By Mount No. 4 I have endeavored to demonstrate further the importance of the condyle path inclination over all other factors. In central occlusion Mount No. 4 presents the same contact relation as in the other three mounts. However, with the condyle paths remaining the same as for the other mounts, the balance will be interrupted. The occlusal plane is now far above the condyles and is inclined upward at an angle of 40° from hori-

zontal. By simply increasing the condyle paths by 40° we find that in all intermediate positions the teeth present a balance practically identical to the other three mounts. Note that the magnitude of the curve of Spee remains the same, but its position has been changed. Yet balance was restored by simply reestablishing harmony between the condyle paths and the inclined planes of the teeth.

I have demonstrated that the position of the line of occlusion may be changed considerably without interrupting balance. You should therefore hesitate in adult orthodontia to mutilate a sound tooth in order to establish a line of occlusion conforming to some obsolete theory.

I have endeavored to present this subject more from the standpoint of occlusion than from the standpoint of articulators. The teeth were set to present maximum occlusal contact in central occlusion, the condyle paths and the magnitude of the occlusal curve being established entirely by tooth form. You may ask: "Would these teeth present the same occlusal contact if I had used a steeper curve of Spee?" No. The resulting condyle paths would have been steeper and, as a consequence, in protrusive and lateral occlusions the teeth would not make contact in the bicuspid region. However, this contact relation would be practically identical in all mounts, provided harmony existed between the guiding influence of the condyle paths and the controlling (opening and closing) influence of the inclined planes of the teeth.

If this were a full denture case and the dentures could be placed in the patient's mouth in the position shown in Mount No. 4, could normal function be performed? Certainly not. The line of occlusion is out of harmony with the direction of muscular forces. I have used this mount in combination with the other mounts in order to emphasize the fact that most of our problems of occlusion are operative problems, not articulator problems. We must register and record all relations upon the patient. The sole purpose of the articulator is to maintain these relations; we do the rest.

I have used an occlusal plane in diagnosing the difference in these mountings. Therefore in my opinion an occlusal plane provides the simplest and most scientific means for registering, recording, surveying, diagnosing and determining existing conditions, be it for full dentures, partial restorations or adult orthodontia. In the normal case the occlusal plane is usually located midway between the maxilla and the mandible in the central incisor and second molar regions. The occlusal curve lies below this plane. In full denture work lip length influences us in determining the position of the plane in the incisor region. Transversely, the plane should be parallel with an imaginary line passing through the pupils of the eyes. The incisal edges and the buccal cusps of all maxillary teeth will be below this plane, depending upon the amount of overbite. With the teeth placed in their proper relation to the ridges and with their line of occlusion established as above described, they will be in the most favorable position to maintain balanced equilibrium when muscular forces are applied.

In this brief paper I have called your attention to many vital problems of occlusion. The object lesson should assist you in solving your articulator problems and in turn suggest a practice suited to your needs. Whatever your problems may be, it is my sincere hope that this object lesson as presented will provide a means for conserving your valuable time and will fortify you against the onslaughts of theorists who are continually preying upon your credulity.

401 Iowa National Bank Building

[OSTEOMYELITIS]

Osteomyelitis of the jaws usually runs a more or less prolonged course, lasting from four to eighteen months or longer. From the onset to the exfoliation of sequestra and formation of the involucrum the usual time is about ninety days. By this time the involucrum will be of sufficient strength so that removal of the sequestrum is permissible. Subsequent areas may develop or several segments in the same jaw may be in various stages of the disease. Cases have been reported which have persisted for a number of years.

—DAVIS.

What Dental Infection Does to Us

A Radio Talk

By JOHN OPPIE McCALL, D.D.S., New York, N. Y.
Professor of Periodontia, School of Dentistry, New York University

Probably every one who is listening to this talk has heard about the extraction of teeth for the relief of such diseases as rheumatism, heart disease, etc. This phase of medical science has been so widely discussed and so many people have submitted to such operations that it has found its way even into our humorous publications. So I believe that I am not expressing a novel idea when I state that infections in the mouth may give rise to many disagreeable disturbances in other parts of the body. This being the case, I think it will be permissible to plunge into the subject without further introduction.

About fifteen years ago an English physician, Sir John Hunter, came out with a pronouncement that infection occurring under crowns, bridges and other extensive specimens of the dentist's art were causing a great deal of disease. His statements caused no little dismay among the dentists of this country, particularly as these statements were seized upon by the medical men as furnishing an explanation of the baffling features of many chronic diseases. And this led to an era of nearly wholesale tooth extraction, to which the dentists were for a time the more or less willing partners. The dental x-ray with its capacity for seeking out things which were hidden from the eye became the medium for deciding which teeth should be extracted, with the physician frequently making the decision. All went well for a time, until it was found that people who were subjected to these extractions did not always recover from the diseases from which they were suffering.

This was a most unfortunate thing, since it naturally brought up the question as to whether infected teeth ever caused disease. What actually happened in these cases was that some infection of an obscure type was allowed to remain in the jaw, due to incomplete diagnosis, or the patient had infection in the tonsils or appendix or some such tissue, and when the teeth were removed this infection was left undisturbed to carry on the nefarious business of keeping the patient sick. The meat of the situation in these cases is incomplete diagnosis.

In the early days of practice in this field the failures overshadowed the successes in the minds of many dentists, and, because they did not understand all of the factors involved, they began to question whether the teeth were really to blame and began to revolt against the practice of tooth extraction for the cure of disease.

Dentists objected also to the assumption by the physician of the prerogative of deciding which teeth were to be extracted. This was because the physician had no training in dental science and therefore made many errors, sometimes advising the extraction of teeth which were not infected.

This practice has of course been largely corrected by the physicians themselves.

As an example of the lengths to which physicians have carried this practice, it might be interesting to relate an incident which occurred in England some years back. A physician in Leeds was reported as having extracted all of the teeth in his son's mouth, a boy of twelve years of age. His idea was that, since teeth were the source of so much disease, he would in this manner protect his son from all manner of ills in future years. This incident was the high-water mark of absurdity in the matter of tooth extraction. Needless to say, such extremes of practice could not continue and have not continued. Unfortunately, however, even lesser examples of errors in practice were encountered for a number of years, and the medical profession was not alone in this drastic practice. A certain group in the dental profession modeled their practice along similar radical lines. Since the results of such practice were not always happy, there occurred a rapid reaction among the majority of dentists against this method of treating disease. It now appears that the pendulum has swung too far the other way, and dentists are beginning to realize that in certain cases extraction of infected teeth may be a real blessing to the patient.

What the average person today wants to know is, first, whether infected teeth actually do cause disease elsewhere in the body, and also whether extraction of those teeth will result in a cure of that disease. They also want to know whether infected teeth must be extracted, or whether such teeth can be treated and kept in the mouth with safety. What the dentist and the physician want to know is which teeth are infected, and which teeth are not infected.

It can be stated without fear of successful contradiction that infected teeth can cause a great variety of diseased conditions. This is accepted as a fact by practically all physicians and dentists today. These diseases include rheumatism, heart disease, certain kidney diseases, neuritis, neuralgia, certain types of headache, excessive fatigue, certain serious eye diseases, nervous prostration, St. Vitus' dance, and many other serious and painful disorders.

With the general acceptance of this theory it would seem that the problem of treating such diseases should be simple. Such is not the case, however. In the first place, there are other parts of the body in which infection may become established and these infections may be quite as much to blame as infections in the jaw. Infections in the tonsils, appendix, sinuses of the head and some other tissues frequently give rise to these same diseases.

These facts do not, of course, relieve the teeth of blame when they are actually infected. But it is found that a very complete examination is needed before any treatment is undertaken in all cases of systemic disease. Following this examination, the removal of all sources of infection is considered to be essential to the relief of diseases such as those previously mentioned. This type of infection is commonly spoken of as focal infection, the primary focus being the spot where the first infection gains a foothold, the secondary

focus being the spot to which the infection migrates.

The primary focus has certain peculiarities that have been somewhat difficult to comprehend. In the first place, the infected tooth, for example, is usually not painful; it may be perfectly solid and comfortable to use in mastication. And at the same time it may be the cause of a neuritis in the shoulder or arm which may cause the most intense pain. It is very difficult for the patient to understand such an apparent contradiction. But this fact stands as stated. In the second place, the evidence that a certain tooth is infected may be very difficult to establish, because this infection does not always show in the x-ray.

Another question frequently asked is, "How do teeth become infected?" There are two common methods by which infection gains a foothold in the mouth. One is the so-called "dead" tooth, a tooth from which the pulp or "nerve," as it is commonly called, has been removed or has died. The other is the tooth which has contracted pyorrhea. The latter is the easier to diagnose, since it always shows exudation of pus at the gum margin and is more or less loose in the advanced stages of the disease.

The subject of pyorrhea has already been presented in a previous talk in this series. I shall therefore confine my remarks to the so-called "dead" tooth. In the first place, it is not really dead. We have every reason to believe that such a tooth does not offend the surrounding tissues or the body itself, simply because the pulp has been removed. The trouble with the "dead" tooth, if we may continue to use the word, is the difficulty of keeping it free from infection. This is a difficult and frequently an impossible thing to accomplish. And when it is once infected, it is still more difficult to destroy that infection and keep the tooth in a healthy condition. While we cannot say that all "dead" teeth should be extracted, it is nevertheless true that many such teeth must be extracted where the patient shows evidence of having some focal infection disease.

In this connection the term *abscess* is often used. Like many other words used in medicine, it is given different meanings by different people. As far as focal infection is concerned, a tooth may be considered abscessed when infection is found at the root-end, because of the death of the pulp. The term does not necessarily apply to teeth suffering from pyorrhea. Such teeth may, however, develop abscesses.

Much has been said about the x-ray in connection with dental infection. This means of diagnosis is regarded by dentists as essential to the study of any case of focal infection. It has, however, certain limitations, which are not understood even by all dentists. When x-rays were first used in connection with this branch of practice, it was assumed that they would show the presence of pus in the jaws. And considerable misunderstanding arose from this assumption. The x-ray does not show pus, but merely changes in the structure of the bone around the teeth. These changes may be induced by pus, but frequently the same type of change may be caused by an infection which does not produce pus. In either case there is, of course, infection, and that is the important point.

If infection at the end of the root always produced the same effect on the surrounding bone, the interpretation of dental x-rays would be a simple matter. But it sometimes happens that teeth may be seriously infected and responsible for a focal infection without producing bone changes that will register on the x-ray film. If all "dead" teeth became infected, the failure to register this infection on the x-ray film might not be a serious matter, the determination that the tooth was "dead" being sufficient. But since infection does not invariably follow removal of the pulp, we sometimes find it difficult to determine the exact condition of a given tooth.

Another thing which makes trouble for the dentist in diagnosis is the fact that many people have teeth which give unmistakable evidence of being infected without having symptoms of disease. How this can happen, while at the same time other people with similar dental infection are made seriously ill by it, is one of those apparent contradictions which keep dental and medical practice from becoming a bed of roses. We say that it is a question of resistance, the idea being that resistance keeps the primary infection from reaching any secondary focus. Unfortunately we do not know just what resistance is, nor do we know very much about means for influencing it. Research in this field is urgently needed.

We can only say, then, that, whether infected teeth can be tolerated for a period of time or not, one thing is certain—such teeth represent a menace to the health. It is unquestionably the part of wisdom to see to it that all teeth which give positive evidence of infection either are treated to remove that infection or are extracted. I do not urge wholesale extraction of teeth, but I can state that safety first lies in healthy teeth and gums.

551 Fifth Avenue

Interchanging the Mandibular Records of Two Edentulous Patients

By DAYTON DUNBAR CAMPBELL, D.D.S., Kansas City, Mo.

At the twenty-first annual session of the National Dental Association, held in New York, October 23-26, 1917, the writer read a paper entitled *Why Measurements of the Mandible, Tracings of the Condyles, the Construction of Hypothetical Triangles and the Use of the Face Bow Are All Non-Essential to the Construction of Full Dentures Possessing the Highest Degree of Efficiency.* The writer believes that prosthetic findings during the past ten years substantiate as fundamentally correct most of the conclusions presented in that paper. An outstanding exception occurs with reference to tracings of the condyles. The writer now believes such tracings to be of inestimable value.

In the paper to which reference is made an incident in connection with the use of the Gysi Adaptable Articulator was cited. While demonstrating the use of that articulator, we had registered the degree of inclination of the four condyle paths and had located the two rotation points for the articulator. Upon returning from lunch we proceeded with the case, thinking that we had already adapted the articulator in keeping with the movements registered for our patient. The case was tried in with satisfaction and admiration on the part of those interested. A few minutes later it was discovered that the successful case had been constructed for our patient according to the movements registered by a previous patient.

The writer offered as his conclusion that the elimination of the items mentioned in the title of his paper was possible because "the tactile sense of the tooth cusp is the guiding factor in movements of the mandible."

While the tactile sense of the natural tooth, firmly embedded in the alveolar process, contributes largely to the direction of the movement of the mandible, this is seldom true of the artificial tooth. In fact, unless the artificial tooth cusp is synchronously aligned with movements of the mandible, it actually interferes with these movements. Such interference causes the base to move and shift upon the mucosa, producing trauma and eventually a deterioration of the osseous structure. The writer believes that this is the most dominant factor in the destruction of this supporting tissue. On this account it has been the practice, since the Dallas meeting in 1924, to secure synchronization of tooth cusps with movements of the mandible by means of an adaptable articulator. The wisdom of this practice seems justified by the fact that re-adaptations have come to be exceptions rather than the rule.

The writer trusts that readers who have knowledge of the incident reported in 1917 may note this change in viewpoint. The earlier incident has

been given prominence by Victor H. Sears in a correction which would have warranted mention of this changed viewpoint. To remove erroneous impressions which may have resulted from the paper as first presented or from Sears' use of it is the purpose of this article.

When the Gysi Adaptable Articulator was first used, operators thought that it was necessary to adjust the sagittal condyle slots of the articulator in exact conformance with the actual tracings of the movements of the mandible. The incident showed that exact conformity was not necessary. The writer thought during that period that such incidents showed the futility of attempting conformity or of using individual condylar inclinations.

The incident occurred shortly after the writer had returned from New York after attending the first post-graduate denture course given by Gysi in 1913. At this late date it is impossible to recall exactly how much the cases differed, but they were very similar, i.e., they were not more than ten or fifteen degrees apart in sagittal inclination.

If the discrepancy between the condyle path of the articulator set for the first patient and the condyle path of the articulator as it should have been set for our second patient was not greater than the discrepancy between the condyle paths of the two patients, the case should have functioned satisfactorily—as we recall that it did. Today, as we check the efficiency of artificial dentures, minor discrepancies are eliminated through painstaking "spot-grinding," keeping in mind all the while the rule: "Grind the spot that is not in contact during central occlusion."

We should not forget that the articulator is rigid, and that oral tissues are resilient; slight discrepancies noted while the case is on the articulator may not be important in the mouth. The tendency of the tissues to accommodate themselves to the dentures we have made makes it possible for the patient to wear them continuously from the first. Otherwise accommodation must take place through destruction of tissue during an uncomfortable period of denture-wearing.

There is no doubt that errors similar to that which resulted in interchanging those very simple and very similar mandibular records — and perhaps errors of greater extent—are made daily. Nor is there any doubt that these errors are often unrecognized by patient or dentist and are compensated for by tissue accommodation. However, it is the writer's firm belief that such dentures produce an insidious trauma resulting in atrophy of the underlying tissues.

As practitioner and teacher the writer has always been ready to give the various claims of prosthetic dentistry a fair trial. More than once he has been led astray by the siren call of the enthusiast. At the time the previously mentioned article was written he was intrigued by the euphonious phrase, "the tactile sense of the tooth cusp," aided and abetted by his much loved and respected prosthetic preceptor, George H. Wilson.

729 Shukert Building

Dental Caries and Pyorrhea*

ANOTHER APPROACH

By F. W. BRODERICK, M.R.C.S., L.R.C.P., L.D.S.

FOURTH ARTICLE

In this series of articles we have so far considered the need for a new visualization of the causes behind dental troubles, the manner in which the visualization that I suggest brings about the destruction of the dental enamel in caries and of the alveolar supporting tissues in pyorrhea, and the diathesis or constitution, which may be either congenital or acquired, permanent or temporary, that is responsible for the changes requisite for this destruction—the base line, so to speak, from which the strains and stresses of modern civilized life start to work, be these dietetic, psychological, or what you will. In this present article I propose to attempt to remove certain misapprehensions which I believe to exist, and which seem to militate against the acceptance of the hypothesis which I have formulated.

I have already considered the bogey of the presence of the effects of both dental caries and pyorrhea at one and the same time in the same mouth and have shown that this is quite consistent with the theory that these two conditions are brought about by opposite and antagonistic states, in that these effects, being permanent and having once been produced, will remain, even though the circumstances on which they were dependent no longer obtain, their presence simply demonstrating the fact that at some previous time one or the other of these states prevailed, but in no way suggesting that it exists at the present moment.

Miller's theory of the exciting causes of caries is sufficiently definite and sufficiently proved to act as a starting-point in the consideration of the etiology of that condition. The same, however, cannot be said of any of the suggestions that have been put forward at some time or another to account for the condition commonly known as pyorrhea. I would suppose that one would not be far wrong in stating that the present provisionally accepted idea of the causation of this condition is the infection of the subgingival sulcus by microorganisms which in immune mouths are harmless inhabitants of that cavity, but which on account of some lack of resistance of the tissues in that situation are enabled to become pathogenic and bring about suppuration and alveolar destruction, and that the generally accepted idea as to the cause of this acquired susceptibility lies in the stagnation of fermentable carbohydrate around the necks of the teeth. The difficulty, however, in accepting this suggestion lies in the fact that this is indeed Miller's theory of dental caries, and even those who will not agree with me that the two conditions are essentially opposite and antagonistic will hardly go so far as to say that a susceptibility to the one carries with it a

* Reprinted from *The Dental Magazine and Oral Topics*, September, 1929.

susceptibility to the other. As a matter of fact, I suppose all dental clinicians will agree that, although it is far from rare to find the two conditions present in the same mouth (taking the presence of cavities as demonstrating active caries and of pockets as proving the presence of active pyorrhea, circumstances which I have shown to be unscientific), it is very common to find pyorrhea without caries and in many instances in mouths subject to pyorrhea to discover that the teeth show no evidence of even past caries but are of great hardness and most perfect in formation and structure.

What Constitutes Pyorrhea in its Earliest Stages?

As a consequence of the uncertainties underlying the etiology of pyorrhea, the classifications of this condition differ considerably. Particularly is a difficulty noticeable in deciding what constitutes pyorrhea in its earliest stages, a matter which is of the utmost importance if preventive measures are to be of any avail. If pyorrhea is in fact the result simply of infected gum margins dependent upon food stagnation, then any simple marginal gingivitis constitutes its commencement; it is really a filth disease, and all cases will progress, in default of treatment, to the fully recognized clinical entity with alveolar destruction, pocket formation and the loss of the teeth. If, however, as I suggest, the main feature in its etiology is general rather than local, there may exist types of simple gingivitis which have nothing in common with those of commencing pyorrhea, and which even without treatment will not so progress, and the differential diagnosis between the two will be an important concern.

I have previously explained that I view the subgingival tartar as the primary cause of the alveolar destruction, consequently I contend that the conditions precedent to the laying down of this calculus in this situation are the principal and predisposing causes of pyorrhea. It follows, therefore, that any marginal gingivitis that is brought about other than by a deposition of subgingival tartar is not a sign of commencing pyorrhea at all, but is a condition which, having an entirely different etiology, should not be considered as constituting the same disease. It may be necessary here to add that faults in conservative dentistry, such as an overhang to a filling or a badly fitting collar crown, will act in a similar manner to a ring of deposited tartar and consequently will produce the same cardinal signs of disease.

Two Separate and Distinct Entities

The unfortunate term *pyorrhea,* stressing as it does a flow of pus and consequently an inflammatory process, has tended to strengthen the idea that any inflammatory condition of the gum margins constitutes an early stage, which circumstance is reflected in most of the classifications which are given to this condition. For example, E. G. Talbot divides cases of pyorrhea into infective and septic types and illustrates these two varieties, as I explained in a previous article, contrasting the one with the other. I agree that the contrast is very striking, but for that very reason I would argue that the etiology of the two conditions differs also, in

which case they must form two separate and distinct entities, the latter being that which we recognize in its later stages as undoubtedly pyorrhea, the former being a condition which will not progress to this same state even if untreated.

ARGUING IN A CIRCLE

Turner, believing that the main etiological feature is dirt and carbohydrate stagnation as a culture medium for bacteria, the subgingival tartar being simply the result of the food stagnation, lays it down that "this disease begins in early life, *since the conditions favoring periodontal stagnation are present as soon as the tooth is erupted,* and hence it is found, *at least as a marginal gingivitis,* among temporary teeth and before long in a more advanced stage among the but recently erupted permanent teeth." (The italics are mine.) This, I would suggest, is arguing in a circle. Pyorrhea is due to stagnation, stagnation is present in the mouths of children, pyorrhea commences as a marginal gingivitis, therefore the gingivitis of children is commencing pyorrhea.

Steadman accepts Turner's ideas as to the causation of pyorrhea as depending mainly on bacterial infection and classifies the condition into (1) the germ-stagnation type, (2) the atrophic type, (3) the phagedenic type. He gives as the cause in the first type food stagnation and infection by ordinary oral microorganisms, in the third type infection by Vincent's organism, and confesses that the cause in the second is by no means clear. Now, surely, if the causes in the first and the second are dissimilar, they cannot be considered as constituting the same disease entity. I would call the second, and the second only, true pyorrhea.

DUE TO ANTAGONISTIC STATES

Gottlieb's classification would seem to me to have the same fault. His division is into (1) dirt pyorrhea, (2) paradental pyorrhea, (3) alveolar atrophy, of which he says the second can occur in clean healthy mouths. He apparently believes that the commencement of the pocket is unrelated to the deposition of the tartar, but agrees that, this having once been started, the tartar can bring about its deepening. As to the cause of the paradental pyorrhea he offers no solution, but concludes that this does not lie in the nature or the extent of the infection and postulates a factor X which he believes is enabled to turn dirt pyorrhea into paradental pyorrhea, but without which the two varieties are distinct.

Weston Price visualizes the etiology of pyorrhea quite differently from these other observers, and his suggestions are in many ways comparable with my own. He believes, as I do, that caries and pyorrhea are due to antagonistic states, finding that in active cases the saliva differs considerably in the two conditions, being more acid in the former and more alkalin in the latter. Believing that the essential changes underlying caries are general and metabolic in character, and that they are such as to bring about a susceptibility to certain general diseases, he concludes that the opposite states, those productive of pyorrhea, are the result of the defensive mechanisms of the body "run amuck." I propose to deal

with these suggestions in a later article and will therefore leave the matter for the moment.

Two Distinct Types of Pocket

At this point it is necessary to digress somewhat to remove what would appear to be another misapprehension which is inclined to confuse the issue. I desire to differentiate between two distinct types of pocket. It may happen that as the result of a marginal gingivitis the inflammation and swelling of the mucous membrane produce a pocket which has no connection at all with a deposition of tartar, this being formed on the one side by the crown of the tooth and on the other by the swollen gum margin, its base being the neck of the tooth; it is not associated with any alveolar destruction, and it is, in fact, a false pocket when compared with that which is present in true unmistakable pyorrhea. In this instance the pocket is formed between the root of the tooth, denuded of its alveolus and gum and the soft tissues, its base being rootward of the neck of the tooth, with or without a noticeable extension crownward due to gum inflammation. In this true pocket I believe there will always be found at least some flakes of hard dark subgingival (serumal, if you care so to designate it) tartar, if a careful search is made, and this I submit is the cause of its formation.

Deposition of Ordinary Salivary Calculus

It may be advisable also at this time to mention the matter of the deposition of ordinary soft yellow salivary calculus, which differs in many of its essentials from that of the subgingival variety, resulting in an entirely different clinical condition, although likewise leading in time to the loss of the teeth. Here the deposition is upon, and not under, the gum margins, which rather than being inflamed thereby tend to atrophy as the result of its presence. Further, this atrophy may extend to the alveolar tissue and by its destruction cause the tooth to be lost. Although the final result, so far as the life of the tooth is concerned, is similar and is brought about in a similar manner by the destruction of the supporting tissues, the clinical signs are absolutely different. In pyorrhea there is formed a distinct pocket resulting from destruction of alveolus without destruction of gum, and in a good radiograph the position of both gum margin and the edge of the destroyed alveolus can be seen, any increase in the normal distance between these two lines demonstrating both the presence of a pocket and its depth. In cases of destruction of alveolus by salivary calculus there will be no pocket, in that the gum is destroyed right down to the level of the alveolar margin, and, so long as sufficient supporting tissue remains to keep the tooth reasonably firm, the condition is quite compatible with cleanliness. These two conditions are quite distinct, and the alveolar destruction in the latter must not be taken as a sign of pyorrhea.

The Necessity for Differentiation

This differentiation between a simple gingivitis and a condition commencing certainly as a gingivitis but differing essentially in its origin, in that it is brought about by a deposition of calculus and will eventually become

what is so easily recognized as pyorrhea, is necessary not only to remove misapprehensions and overcome difficulties which I am aware exist in the minds of thinkers in accepting the antagonism between caries and pyorrhea, but in addition to help us arrive at what I believe to be a scientific appreciation of the main etiological factors of this condition and through this of a rational preventive treatment.

Even if we were satisfied that the infective element in the production of pyorrhea is the all-important matter, the visualization or origin is still obscure, for it is now recognized that there is nothing specific in the infection, that the microorganisms responsible are to be found in practically every mouth, whether affected in this way or not. There must of necessity, therefore, be some change in the resistance of the tissues or in the virulence of the organisms, which allows them to become pathogenic in the one case and not so in the other.

A Suggestive Idea

I start, then, with the antagonism between these two principal dental troubles, caries and pyorrhea, differentiated, as I have attempted to differentiate them, from other complaints, and if we accept the fact of an acidosis as playing an essential part in the production of caries, it is very suggestive that the opposite condition, viz., that of an alkalosis, will play some part in the production of the other.

Let us, then, consider this idea. In the first place, definitely reversing the picture presented by the effects of an acidosis on the dental tissues, the decalcification of the enamel through the electrical or physical phenomena resulting from a change in the reaction of the saliva in the direction of acidity, we see that an alkalosis will produce a hypercalcification of this from an increase in salivary alkalinity and consequently will account for the fact that an immunity to caries will come about when a tendency to pyorrhea presents itself.

A By-Product

But this alone is insufficient to account for all the details which we associate with the clinical picture with which we are all so familiar. This hypercalcification and immunity to caries I suggest is but a by-product and a side line in the circumstances which result from an alkalosis and its effect upon the teeth and surrounding tissues. The more important part of this lies in another result of the need for compensation, which will arise in these conditions. We have seen that an increase in the proportion of acid in the blood necessitates both an increased elimination of a neutralization, in which case there may arise a diminution of available alkali and a shortage of calcium. Now, an increase in blood alkali must also be compensated by elimination and neutralization, but the effect of this is not necessarily just a simple reversal of process, and the result an increase in blood calcium, the conditions not being an exact parallel. In the first place, the limitations of alkali elimination are not the same as those of acid in opposite circumstances, and, in the second place, the limits of blood calcium are fixed at saturation point.

Furthermore, it must be remembered that the question of the amount of

either acid or alkali is not so important as their proportion, and the method by which the alkalosis is brought about plays a distinct part in the final result so far as the calcium content of the blood is concerned.

I must content myself on this occasion with illustrating the production and compensation of an alkalosis by one example, viz., that produced by a want of oxygen. When for any reason there happens to be a difficulty in getting a sufficiency of oxygen to the tissues, either from a shortage of this in the air breathed or from a difficulty in the carrying capacity of the blood, the natural sequence of events will be an increase in the respiration, with the object of inhaling a greater quantity of oxygen per minute to overcome the difficulty, and the immediate effect of these increased inspirations will be an increase in the expirations. In the same manner as the increased inspirations will increase available oxygen, so the increased expirations will wash out from the blood an excessive amount of CO_2. Now this is an acid gas, and its loss will in a very short space of time upset the proportion of acid to alkali in the blood in the direction of an alkalosis, which will immediately attempt to compensate itself by increased elimination of alkali by the kidneys and also, as I have previously explained, by a diminution in respiration. This latter function, however, cannot be carried to any great extent owing to the anoxemia, and a balance will have to be struck between the need for oxygen and the desire to preserve CO_2, which will lead eventually to an excessive loss of alkali, and yet at the same time there will still be a tendency to an alkalosis due to CO_2 depletion. Here we get a rather curious state of affairs—an alkalosis more or less compensated, leaving the proportion of acid to base more or less proportional but with the amount of each deficient—an alkalosis, that is, with a diminution of alkali.

It so happens that the amount of CO_2 in the blood is an important element in regulating the amount of calcium that this can hold in solution, this being present normally in saturated solution held there by the dissolved CO_2 and the colloids. Any circumstance, therefore, that will diminish the CO_2 will necessitate the removal from the blood of a quantity of lime salts, this being for that saturation of CO_2 oversaturated with lime. In conditions, then, of an alkalosis resulting from an anoxemia circumstances are favorable for calcium deposition in suitable situations. Let us see if these facts have any bearing on the etiology of pyorrhea.

I suggest that a deposition of subgingival calculus is the condition precedent for the commencement of this condition, defined as I have shown above. Warwick James, in his more recent work, proves that this deposit is present in every case of pyorrhea, suggesting, I suppose, that he would agree with me in my definition. I believe that in the subgingival spaces we have an optimum position for this deposition, given the circumstances just enumerated, for, as Black says, "these gingival spaces are kept constantly bathed in serum from that portion of the free gingivae which lies normally in contact with the enamel." Given the calculus with its irritating and inflaming action, the sulci are open to infection by any microorganisms which inhabit

the mouth, and the whole sequence of events becomes not only explainable but inevitable.

An Anoxemia Suggested as the Cause

From this it will be seen that I am suggesting that an anoxemia is a cause of pyorrhea on account of the alkalosis that it tends to bring about. This does not by any means imply that I believe that a want of oxygen is the only or even the most important factor in its production; any condition that will produce the alkalosis will probably act in the same manner if the method of compensation that is required be similar. It may at first sight seem improbable that states of anoxemia are common enough to account for even a small portion of the cases of pyorrhea which we see almost daily, but I would point out that this condition may exist in its milder forms without any noticeable symptoms. I have myself kept monkeys in an atmosphere in which the oxygen percentage was reduced from 20% to 12% for eight hours at a time without any symptoms of distress at all, and when we remember that a concentration of 12% of oxygen will not support combustion, it is easy to realize that it is quite possible for the very mild states of anoxemia to be present without our knowledge. In fact, it is the mild anoxemias that should give the worst results, for it has been shown that when these reach the high dilutions certain metabolic changes take place which, through a production of an acidosis, overshadow the alkalosis.

The Carbon Monoxid in the Atmosphere

In addition to the question of living in badly ventilated rooms and the hours spent in offices and workshops, the matter of the presence of carbon monoxid in the atmosphere must be considered, especially in these days of gas fires and petrol engines. This gas, by uniting with the hemoglobin of the blood, effectually prevents the carriage of oxygen and in this manner will bring about an anoxemia. Here again it will be the mild states of CO poisoning, insufficient to produce any symptoms but enough to throw out of action a certain percentage of red corpuscles, that will bring about this result. If, combined with these disadvantages, circumstances are such that the ordinary and the usual amount of acid is not manufactured within the body to help balance this additional alkali, then the stage is set for the deposition of subgingival tartar, and pyorrhea will gradually develop.

Conditions Most Common in Middle Life

It so happens that all these circumstances are those which are usually met with in middle life, the decade 40-50 being the most common. At this time the tendency is to give up the more strenuous exercises of youth with their acid products, and business life necessitates in so many instances the indoor existence with its concomitant anoxemia. When to this are added the worries and emotional distresses of business, all conditions are favorable for an alkalosis and its effect on the teeth and surrounding tissues in those whose diathesis is favorable.

All this is fully in accord with clinical experience, as it agrees with the findings of Bunzell on salivary reaction in age groups and of Starr in overbreathing and in emotional upsets, all of which have been referred to in previous articles.

I should have liked to consider other circumstances, such as the effect of a hyperchlorhydria on the acid-base equilibrium and on salivary reaction; the effects of nicotine on the vegetative nervous system, together with the risks of mild CO poisoning from the consumption of tobacco; certain general diseases such as some of the anemias, nephritis, etc., which are intimately associated with this subject; and the effect of emotional disturbances on the adrenal system and through this on respiratory habits and salivary reaction. Space however, prevents me from going further into the subject.

An Illustration

One illustration from my practice, however, I should like to add:

A youth in the early twenties came to consult me on account of pyorrhea. There was no doubt about the condition, all his teeth being very loose with deep pockets, much alveolar destruction and a great discharge of pus. On account of his age I was particularly interested in his condition and went carefully into his history. I found that he was a musician, playing in and conducting an orchestra at a tea house from eleven to six daily and spending the evenings with a dance band from nine to one or two in the morning. He took no exercise whatsoever and spent his whole time in the fetid atmosphere of the restaurant and the ballroom. Here was sufficient warrant for assuming an anoxemia, and when this was considered with the beautiful preservation of his teeth, as teeth, the whole thirty-two being present without spot or blemish, one could realize that his diathesis was such that it would preserve him from an acidosis but tend to bring about an alkalosis on the slightest provocation.

Having now decided what pyorrhea is, we are in a position to differentiate between those cases of gingivitis which are in no way related to this condition and those which are in truth cases of commencing pyorrhea, and in which preventive treatment along the lines to be suggested in the next article should be undertaken without delay.

The points to be considered will be:

(1) Is the pocket a true pocket formed by the destruction of alveolus, however minute in amount, or simply the result of a swollen and inflamed gum margin?

(2) Is there any suggestion of a deposit of subgingival tartar?

(3) Are the circumstances of the history such as would be likely to bring about such a deposition? Here the state of the teeth, as teeth, will be a considerable help in forming an opinion. The presence or absence of fillings or cavities, the evidence of past caries, will suggest a clue to the constitution with reference to stability of acid-base balance.

(4) The reaction of the saliva as a test of alkalosis or otherwise, bearing in mind the age group and all the other circumstances of the case, particularly the fact that the clinical condition may be the result of a past upset, the effects remaining after the altered state has

improved. This is indeed a matter of medical diagnosis and requires some knowledge and experience in some cases, as the pitfalls are numerous, but if prevention is to be satisfactory, it is essential that the whole circumstances be considered and a correct diagnosis be attained, for reasons that will be explained in the next paper.

(To be continued)

[ONE-PIECE CASTINGS]

The advantages of the all-gold one-piece casting are many, among them being simplicity of construction, greater ease and accuracy in fitting, saving of time, greater variation of design, freedom from soldered joints, need of but one sitting for impression and one for installation, direct casting to the model and the securing of a replica of the mouth conditions in a hard refractory investment compound, which enables the dentist or technician to make accurate survey and thereby predetermine installation and service and maintenance problems, and to simplify the designing of the appliance.

—ROACH.

A Critical Analysis of Present-Day X-Ray Conditions

By ROBERT M. FISCHER, D.D.S., New York, N. Y.

(*Continued from November*)

One of our chief complaints in this critique of the misuse of the x-ray in dentistry is the methods of teaching roentgenography—or, rather, of not teaching it—in our schools. The evils of the system which created the present appalling ignorance of roentgenography in dentistry are apparent. Insufficient knowledge of anatomy, inability to distinguish between the normal and the abnormal under the x-ray, lack of a standardized technic, no precision of exposure which makes it possible to retake one area several times for follow-up purposes, and uncertainty in interpretation of films are but a few of the dozens of results of such a system. We humbly confess that we have neither scanned the curricula nor learned the teaching methods employed at the present time in the x-ray departments of all of our leading schools, but if the average practitioner's conception, technic and interpretive skill were gleaned in the dental school he attended, then wholesale revision of teaching methods is strongly indicated. For in many cases he has not the remotest idea of the full possibilities of the x-ray, and his technic seems to differ with each exposure he makes. In order to have uniformity of results we must have uniformity of technic, and certainly a man is entitled to learn it during his formative stage as a student instead of being compelled to pick it up as a hasty aftermath following graduation.

Yet only half of the truth has been stated. The natural sequel to this failure on the part of the schools to make trained roentgenographers as well as trained operators and prosthodontists is that laymen will assume the obligation which the schools neglected. It does not take very long to teach a salesman the important working parts of his x-ray machine. And as he gets further ahead in his work, and if he keeps his eyes open, he may soon pick up sufficient scraps of knowledge about roentgenography to be able to impress the dentist who has had no experience of his own with a machine. But the salesman's mission is scarcely an altruistic one, and so he cannot afford to waste too much time teaching his prospect x-ray technic, especially if the latter is about ready to sign on the dotted line. When that important ritual is performed, the salesman's work is done and he leaves his erstwhile prospect for other virgin fields.

How has he sold his machine? Purely by explaining a few technical formulas? Or because the dentist himself foresaw the necessity of the machine? Not, unfortunately, as a rule! The easiest way to sell any mechanical device is to show its buyer how he can employ it profitably. And so the biggest selling point of any x-ray machine is that it is a *money-maker*. When this idea becomes uppermost in the mind of the purchaser, he is immediately embarking on the most

certain route toward financial loss, because he will shortly discover that the instructions he received from the salesman fall far short of being adequate for all the uses to which he will wish to put his machine. His failure to equip his mind properly with sufficient knowledge of roentgenography results only in dissatisfied patients and eventual monetary loss to himself.

It is high time that we began to depend more upon ourselves for this highly important work and less upon outside agencies. True, a great many men are busy at the chair all day without interruption, but that merely strengthens our argument. For the busier a man is kept, the more x-ray work is necessary, and a busy general practice will keep a competent, well-trained x-ray technician busy all day, working under the eye of the man who is properly trained to direct and supervise the work of this technician. This would also afford opportunity for practically perfect work, since the technician would develop all films while the patient was still in the chair and thus make possible immediate retakes where necessary.

But the pernicious custom, so prevalent today, of sending patients to professional x-ray laboratories for their dental x-rays is an effective barrier to all the improvements we could offer for the next ten centuries. We have no quarrel with the professional laboratories, because they have a definite place in the field of x-ray, but dental roentgenography is not included in that field. It is a commercial impossibility for the laboratories to give adequate service for the fees they charge. Their rates are of necessity very low in order to be able to compete with the dentist—or to prevent him from competing with them—but in reality they are not competing with him. They are merely helping and encouraging him to be slip-shod in his work, and, to be absolutely candid, a number of them fortify their position by the vicious practice of fee-splitting. Whether they send the dentist a "rebate" or a "commission," the fact remains that it is splitting fees, and we as dentists should properly smart under the sting of such an insult rather than tolerate it and even encourage it.

The vast majority of dentists send their mechanical work to a laboratory or technician and rely upon the latter to furnish the proper appliance. When the piece is completed, the dentist scrutinizes it very closely and any corrections and adjustments are painstakingly completed before the patient is permitted to wear it. Why isn't the same thing done in the case of x-ray films and plates? The patient is entitled to equally as much care and attention as he receives in his restorative work. Yet it would appear that simply because the patient himself is not called upon to pass final judgment upon x-ray films, any slovenly method of position, exposure, developing and interpretation will suffice. We rationalize ourselves into believing that our duty to our patient is discharged when we send him to "have his teeth x-rayed." When this formality has been attended to, we receive a neatly typewritten report along with the x-rays and blandly—yes, even recklessly—inform the patient of the "findings."

Do we generalize too much? Are we unjust or merely "too critical"? If we

are unjust, we would welcome evidence of our inaccuracy. But if we are "too critical," then indeed the outlook is a sad one, since it could signify only one thing—that the profession is satisfied with hit-and-miss methods where, by the exercise of their own knowledge and skill, they could easily improve themselves and thus do their duty to their patients.

We trust that by now the mental attitude of our readers who feel that they have a few problems which may be solved has become sufficiently adjusted so that they can now more fully appreciate the enormous possibilities of the x-ray in their practice. The x-ray is the greatest practice-builder the dentist possesses—when he realizes its possibilities and understands its limitations.

597 Fifth Avenue

[THOROUGH EXAMINATION NECESSARY]

Since the mouth is universally recognized as the special field of the dentist, he should consider himself responsible for the detection of every morbid condition that may exist there. A general examination of the mouth should be just as much a routine affair in the case of a patient who presents himself for the treatment of diseased teeth as is the general examination of the body by a physician when a patient complains that his heart is acting badly. But such an examination is the exception rather than the rule.

—HIPPLE.

International Dental Federation

Chairman: Viscount de Casa Aguilar, Madrid
Secretary: Geo. Villain, Paris
Treasurer: A. L. C. J. van Hasselt, The Hague

The International Dental Federation held its 1929 annual meeting in the University Building at Utrecht, Holland, August 7-11. The official representatives of dental societies in eighteen countries were present. Dentists of forty countries are associated with the International Dental Federation, which consists of the Executive Committee, in which the countries concerned are represented by from one to five votes, according to the number of their dentists, and of nine commissions. The object of the Federation is, according to Article 2 of the statutes:

(a) The acceptance or rejection of invitations by various countries to hold a regular International Dental Congress and to fix the date and place where such Congress shall be held.
(b) To maintain and strengthen the ties that bind the national societies to each other.
(c) The organization of such international commissions as it may deem necessary to create.
(d) In a general way to promote the organization of bodies that will contribute to the advancement of odontological science throughout the world.
(e) To award the International Miller Prize.

The labors of the Executive Committee and of the commissions furthered these objects well during the meeting at Utrecht, reports of which will be issued later. In particular, the arrangements for the next International Congress at Paris in August, 1931, which had been submitted by the Paris Organization Committee, were approved.

Colleagues, visit the Eighth International Dental Congress at Paris in August, 1931.

On the occasion of the meeting at Utrecht the Association of Dutch Dentists organized a congress with an exhibition on mouth hygiene. This Dutch meeting was under the patronage of Her Majesty, the Queen Mother, and the honorary presidency of H. R. H. Prince Hendrik of the Netherlands. Our colleague, A. L. C. J. van Hasselt, of The Hague, presided.

The congress dealt in three sections with all-important questions of mouth hygiene. Thirty-eight papers were read by Dutch and foreign colleagues. These papers have been published in a special number of the *Tijdschrift voor Tandheelkunde.*

The exhibition was held in two rooms of the University. One room contained the exhibits from Holland, the other those from America, Belgium, Canada, Germany, England, France, Japan, etc. The exhibition demonstrated valuable material, especially for propaganda purposes among children and adults, in the interest of the hygiene of the mouth and teeth.

The exhibition was open to the pub-

lic, who visited it in large numbers, and to them were shown films on mouth hygiene from America, England, Germany, Holland and France.

An industrial exhibition gave the Dutch and foreign dentists the opportunity of studying innovations. Reports on the exhibition, etc., will follow later.

All the foreign participants were most enthusiastic in their praise of the hospitality of their Dutch colleagues, so that this meeting of the I. D. F. was most successful in every respect.

[REMOVABLE APPLIANCES]

The treatment of malocclusion can never be successfully performed by "loose appliance" intermittently applied but only by the application of an efficient mechanism that is skilfully adjusted and intelligently manipulated by one who is thoroughly familiar with all the biologic laws that are so intimately associated with and influential in regulating the growth, development and stability of the component parts of the organ of mastication.

—STRANG.

DIGESTS

ROUTINE X-RAY EXAMINATION DISCLOSES A SERIOUS PATHOLOGIC CONDITION

By Harry E. Kelsey, D.D.S., F.A.C.D.

The author presents this case as an example of the importance of complete x-ray examination before instituting treatment. The case was one of average malocclusion, but the x-ray showed the presence of a large cyst between the first and second molars which had prevented the full eruption of the second molar. If this cyst had not been discovered, there probably would have been a pathologic fracture of the mandible within six months or a year.

The cyst and, because of involvement, the first molar were removed. An x-ray four months later showed a remarkable regeneration of bone with a tipping forward of the second molar. It was hoped that orthodontic treatment could be started in a short time. —*The International Journal of Orthodontia, Oral Surgery and Radiography,* September, 1929.

A FATAL CASE OF BRAIN ABSCESS FROM VINCENT'S ANGINA

By L. E. Thompson, M.D.

On searching the literature it was discovered that Vincent's organisms had been found in cases of acute leukemia, pemphigus, hospital gangrene, pelvic peritonitis, industrial wounds, gunshot wounds, tooth wounds, and two cases of brain abscesses. The etiologic importance in all these conditions is not clear. Though little is known in regard to the organisms, it is certain that Vincent's angina is practically endemic in some localities and is increasing in frequency.

In the case under consideration the patient, a housewife, had a right maxillary second molar extracted on March 25, 1929. Pain developed in the right ear and continued until April 2nd, when a physician was called. Examination showed an infection of the external canal and an inability to open the mouth. A smear showed a plus 4 Vincent's infection in the mouth.

On April 6th the patient was sent to a hospital with a temperature of 103° F. The breath was very foul. On April 15th a large incision was made inside the mouth into the sphenopalatine fossa, and the maxillary sinus was opened through a tooth socket. An incision was also made through the skin along the lower border of the inferior maxilla to the under surface of the parotid. One ounce of pus was removed. On April 16th the patient died.

At autopsy an abscess was found in the sphenopalatine fossa extending by way of the middle meningeal vein to the longitudinal sinus, both of which contained pus. There was an abscess of the right temporal lobe, moth-eaten in appearance, typical of Vincent's

angina and presenting Vincent's organisms on smear. There were abscesses in both orbits, and there was thrombosis of the cavernous sinus with Vincent's organisms on smear from both. —*The Journal of the American Medical Association,* October 5, 1929.

BLOOD EXAMINATION

By Irwin A. Epstein, D.D.S.

"Dental students should be taught to observe alterations in the mouth in cases of systemic disease by being given the opportunity to see and study cases in hospitals which are associated, for teaching purposes, with dental colleges. By recognizing the mouth manifestations of systemic diseases, dentists can broaden the scope of dentistry as a health service.

"The dentist has the right, and is distinctly obligated, to order examination of the blood in cases in which he believes blood findings to be of value, just as he makes use of other diagnostic aids at his command.

"Blood examination should be made:

"1. When there are spontaneous hemorrhages from the gums and mucous membranes without obvious and direct irritation or injury.

"2. In Vincent's infection which prolonged thorough treatment does not clear up.

"3. In cases in which there are numerous petechial hemorrhages in the gums, mucous membranes or tongue.

"4. In post-operative hemorrhage which cannot be controlled by local therapeutic measures.

"5. In cases in which the history shows a marked tendency to bleed from minor causes.

"6. For individuals with marked pallor of the mucous membranes.

"7. In sore mouth or tongue which persists without demonstrable local irritation.

"8. In cases showing metallic sulphid deposits in the gingivae.

"9. In cases in which it may assist in determining the status of infectious processes.

"10. For roentgen-ray technicians periodically."—*The Journal of the American Dental Association,* October, 1929.

PREVENTIVE DENTISTRY

By William Dwight Tracy, D.D.S., F.A.C.D.

Operative procedures on the deciduous teeth may, in a large percentage of children, be confined to the use of silver nitrate in the pits and fissures. The home routine in regard to the care of the mouth must be conscientiously followed.

In the permanent teeth, when it is thought necessary to fill the pits and fissures in the molars, there are three methods available:

(1) The pits and fissures are cut out with small burs and filled with pink baseplate gutta-percha, which will protect them until small fillings of non-cohesive foil can be inserted.

(2) The use of Hyatt's method of prophylactic odontotomy. When amalgam is properly used, the fillings are very satisfactory.

(3) The use of silicate cement as advocated by Ottolengui. The cement is worked into the pits and fissures with

small points and then burnished. The fillings are practically invisible and give good service.

The six anterior teeth must be watched carefully and suspicious areas polished with fine strips. Pits and sulci receive the same treatment as when they are cared for in molars.—*The Journal of Dental Research,* October, 1929.

PHYSIOLOGY OF TOOTH MOVEMENT

By MARY N. BERCEA, D.D.S.

Tooth movement is a process governed by definite mathematical laws and is brought about by an architectural reconstruction of the bone. The osteoblasts and osteoclasts must be stimulated to increase functional activity. The stimulus is supplied by pressure, which brings an increased blood supply to the parts and consequently an increased amount of nourishment.

If the degree of stimulation is too great, the result will be circulatory disturbances resulting in inflammatory changes and destruction of the tissues. Consequently mechanical appliances should be under proper control so that the correct force may be applied in the right direction. This force should be carefully considered before starting treatment, and, when once started, it should be applied continuously and without change of direction until the desired movement has been accomplished.

Excepting certain cases in which constitutional conditions are responsible, the cause of inflammatory reactions are due either to the use of an appliance that does not comply with the physiological requirements of the tissues or to the improper control of the applied force.—*The Dental Cosmos,* October, 1929.

Foreign Dental Literature

Edited by JOHN JACOB POSNER, LL.B., D.D.S., New York, N. Y.

TRUE NEURALGIA OF THE FIFTH NERVE

By DRS. WERTHEIMER and ROMEY, Lyons, France

A man of sixty-five presented for treatment because he was suffering greatly from neuralgia. He had seen forty years of service in the navy and except for a slight deafness had always enjoyed good health. He was very fond of fishing and spent whatever leisure he had in satisfying this desire. He exposed himself to all kinds of weather in order to fish, and this seems to be the only thing to point to as a source of his trouble.

About twenty-eight years ago he had the first symptoms of a neuralgic pain, which lasted but a short time and then disappeared. When it recurred, it lasted a long time and was so extremely unbearable that he had several teeth extracted in seeking relief. The pain did not subside and in the course of time he had his teeth removed one by

one in the hope that this would afford him freedom from suffering. This, however, did not avail and various sedatives from aspirin to aconite and morphin were employed. Alcohol was then injected. The points were the terminals of the fifth nerve at the mental and the infra-orbital foramina. For two years he had complete relief, but the old pain came back. Alcohol was used again and all was well for about a year. This went on for a period of six years, each time with a decreasing value in the efficiency of the alcohol.

Here was a case of true neuralgia with reflected pain to the mandible and to the maxilla as well. The cause remained obscure. In the end, even morphin failed. It appeared as if the patient was headed for suicide.

An operation was finally decided upon. Such good results had been obtained in similar instances that it was decided to remove the terminal branches of the fifth nerve, the infra-orbital and the mental. This operation is known as retrogasserian neurotomy. Dr. Wertheimer has a series of thirty such cases on record with but one case of death, due to peculiar conditions.

Under a rectal anesthesia of oil and ether, completed by chloroform at the moment of operation, a vertical incision was made perpendicular to the zygomatic arch. The temporal bone was trephined and a small round piece of bone removed, together with a small section of the lesser meningeal artery. The detachment of the dura mater was difficult. The brain cavity was thus exposed and a section made of the sensitive root, with just a little piece left behind. Recovery was normal. In eight days the patient was up and has been free from neuralgia ever since the operation.

One must be extremely careful in diagnosing true neuralgia, for there are many cases of dental origin causing the pain, which will disappear as soon as the irritant is removed. In true neuralgia no amount of treatment and examination will reveal the source of pain. In one case neuralgia was cured by the removal of a piece of tartar attached to one of the teeth.

In conclusion the authors say that neurotomy performed for the relief of neuralgia is a simple and safe procedure and is to be preferred to the more dangerous procedure of extirpation of the Gasserian ganglion.—*La Province Dentaire,* July-August, 1929.

TREATMENT OF MANDIBULAR FRACTURE THROUGH SPLINTING

By Dr. Walter Flohr, Berlin, Germany

The author takes exception to the work of Jonas, who believes that the maxilla should not be used in conjunction with the mandible in the fixation of fractures. Jonas advises a single splint for the mandible. Flohr uses both jaws to help in reducing deformity and holding the parts in place until healed. He bases his opinions on a series of more than 200 cases.

From Flohr's experience he found it difficult to take an impression of the mandible where there had been fracture, displacement of the parts and swelling of the soft tissues. An impression obtained on which a splint was made would be inaccurate and produce

a poorly fitting splint. No bite can be taken, as is done when the jaws are normal, and this prevents the help of articulation.

No impression is needed in the author's technic, which, incidentally, is very widely followed in Germany. Orthodontia bands fitted with horizontal tubes are fastened to the molars. An arch of half-round wire is made by conforming it to the dental arch with a pair of pliers. This is quickly and easily done and does not require an impression. The ends are passed through the tubes on the molars, and the arch itself is fastened to the remaining teeth by means of ordinary brass ligature wires. A similar arch is made for the maxilla, and then both are held together by additional wires or rubber bands.

The important features of this method of treating fractures are its simplicity, speed of application and splendid results.

Waszmund is quoted as saying that the best and most reliable method of setting fractures is the wire arch made at once for the patient. The wire arch is easily conformed to the teeth, and after a little practice it may be done just a little nicer than on a plaster model. All that is needed for the work is a pair of pliers, ligature wires, arch wire and molar bands.

In old fractures where deformity exists, the intermaxillary arches described are of particular advantage, as the rubber bands will pull up into articulation any parts out of alignment. It may be directed mesially or distally if necessary. The headpiece which is used by some is not favored because of its inaccuracy and for the further reason that its appearance does not permit the patient to go about his daily task.—*Zahnärztliche Rundschau*, September, 1929.

DEATH FOLLOWS AN EXTRACTION

By DR. FRANCISCO BUENO, Madrid, Spain

A patient came to the office complaining of a molar which scratched his tongue. The mouth was extremely septic. The right mandibular first molar showed a crown partly destroyed by caries, but there was no pain on tapping and no evidence of trouble in or about the soft tissues. There was an ulceration on the tongue the size of a dime. The dentist cleaned the teeth and, using a new needle, injected 2% novocain from an ampule. Anesthesia was satisfactory and the tooth was removed, although it offered considerable resistance. Owing to the filthy condition of the mouth, and in order to avoid sepsis, 0.50 c.c. of polymicrobic serum was injected in the suprascapular region. This treatment is recognized as of great value for this purpose. The patient returned the same day with hemorrhage from the socket, and, again fearing infection, the dentist injected a drop of a vaccine which usually acts well in conjunction with the one already administered. Pressure with gauze was applied to the wound and the bleeding ceased.

Three days later the relatives of the patient called the dentist and told him that his patient was ill in bed with a swollen face and high fever, which had led them to call in a physician. The patient was seen and there was a light

swelling in the right submaxillary region. Hot applications were administered and the socket was irrigated with hot solutions. The condition of the patient was bad, but not disquieting. Then there appeared fluctuation, but when an incision was made no pus came. The patient became progressively worse. The side of the neck swelled and an external incision brought forth a quantity of foul pus. An eminent surgeon was called in and several days later, despite all measures, the patient died of septicemia.—*La Odontologia,* March, 1929.

CONTRA - INDICATIONS IN LOCAL ANESTHESIA WITH NOVOCAIN

By Dr. Jean Veyrassat, Geneva, Switzerland

The question of the injection of a local anesthetic in the region of the field of operation is discussed. The author reminds us that Keller in 1884 was the first to operate under cocain, and shortly thereafter Halsted applied local anesthesia to dentistry. It is well to remember that unquestioned credit for being the first to make a block injection of any kind—and, for us what is most important, the mandibular injection—goes to William Stewart Halsted, Professor of Surgery, Johns Hopkins University, Baltimore, Md.

The great enthusiasm which greeted cocain was greatly dimmed when its disastrous after-effects were learned. Local anesthesia fell into disuse and came back to its own only with the advent of novocain in 1905. Since then all records in hospitals and clinics show an increasing employment of local anesthesia over general.

Despite the great safety of novocain it is pointed out that grave danger exists when the injection is made into infected areas such as abscesses, acute or chronic, or into the peridental membrane of pyorrheal teeth. The author quotes from his general experience of more than twenty-five years to the effect that these rules are similar to those in general surgery, where one must never inject directly into infected areas. A general anesthetic should be employed.

Novocain injected around the immediate vicinity of an infection infiltrates the cellular tissue and causes vasoconstriction. The tissues become pale and the circulation, already restricted by the pressure of the solution, is further impaired by the presence of the chemical action of the anesthetic.

With the capillaries contracted the protective phagocytic action of the blood is ineffectual. This makes the area a good subject for invasion by bacteria. The anesthetic solution itself becomes septic from contact with the infection.

In a word, to make an injection around or in contact with an infected area is to paralyze the defensive mechanism of the body. Local anesthesia has a valuable place in dentistry, but it must be used with discretion.

An injection made between the tooth and the edge of the gum (peridental anesthesia) produces an ischemia, and after the tooth has been removed the lack of circulation interferes with the formation of a protective blood clot and the proper closure of the socket. A case is cited where an injection into a pyorrheal pocket set up a septicemia

which caused death. Osteomyelitis and extensive abscesses are also produced by injecting into an infected field. It would be better practice in such cases to administer a general anesthetic.

In conclusion the author says that no doubt exists as to the great value of local anesthesia properly carried out, and he feels that the disastrous cases that have been caused by carelessness or lack of proper technic should be a warning to be always on guard.—*La Province Dentaire,* July-August, 1929.

RADIOGRAPHIC EXAMINATION OF THE SPONGY STRUCTURE OF THE MANDIBLE

By CARL ADLER, Basle, Switzerland

The study of the structure of the spongy bone of the mandible has been a source of interest to the author, as he feels that the work of others in this field has been rather indefinite. He finds that radiographs of both sides of the same mandible, although apparently alike, may show great differences in structure.

To try to obtain definite information as to the structure of the bone, the selection of cases was carefully made. It was desired particularly to eliminate all causes which could change the normal appearance. Only those cases were chosen which fell into the Angle's Class 1. All radiographs were taken with the head held vertically so that a line from the tragus of the ear and passing beneath the nose was horizontal.

The author quotes from Colyer as to the normal characteristics of bone:

"1. The cortical layer appears on the spongy bone as a thin white line. It is seen as compact bone of the interdental septum. In normal cases there is no break in this line, which we also know as the lamina dura.

"2. The periodontium shows as a fine shadow between the root and the lamina dura. In a healthy tooth it is the same thickness throughout.

"3. The spongiosa is difficult of exact description and is the point of interest for the author. It is principally determined by the thickness, structure and arrangement of the individual trabeculae of bone.

"4. Compact. The only compact bone of importance is seen about the mandibular canal."

Three sets of cases were then examined, those with perfect teeth, teeth with fillings and, finally, teeth with root-canal work. If the various pictures are compared, it is difficult to find two that look alike. The spongy bone is very complicated and is affected by changed dentition, occlusion and retention. Changes in the calcium content of the bone are seen especially in sclerosis.

In middle age there is a tendency toward increased meshwork in spongy bone. It is to be noted that the meshes or trabeculae are always at right angles to the cortical layer of bone which follows the root outline. These horizontal meshes may be influenced in shape through the pressure of impacted third molars. Toward the apices of the teeth the horizontal meshes become arched upward. This is particularly noticed in cases of wide meshwork, and the meshwork is usually open below. If the teeth are slanting, a clear pic-

ture of the cortical layer cannot be obtained. The x-rays must fall at right angles to the tooth in order to get a sharp cortical outline. It is usually a little heavier mesially.

Sclerosis of the spongy bone is seen following root amputation. In a study of a number of such cases more than one-half showed sclerosis.

In conclusion the author feels that that is no definite means of classifying types of spongy bone.—*Schweizerische Monatsschrift für Zahnheilkunde,* September, 1929.

DENTAL ECONOMICS

Some Factors In Success*

By S. J. HORN, New York, N. Y.

There are three requisites essential for the building and maintaining of a successful practice. One is technical skill, another is sincerity of purpose, and the third is practical application. The first is by far the most important, for, unless a dentist possesses the professional ability to diagnose a pathological condition and the technical skill to cure and adjust oral defects so that the satisfactory service rendered will bring the patient back for additional services and recommend other patients to him, then the suggestions in this article or in any of the articles that may follow will be of no avail.

While it is true that many a man has climbed on a pedestal, yet only those who have truly merited it have been able to remain there. The mediocre, who have attained that exalted position by accident or misrepresentation, topple back into the slough of mediocrity without even a chance for a foothold on the coveted elevation. No matter how much of the so-called "front" we may put on, without true merit to support us we are doomed to remain just a piece of ordinary metal in spite of the lustrous polish we may put on the surface.

Next in importance is sincerity of purpose. By that we mean actual love for our chosen work. No progress of any degree has been made by those who look upon their work as a necessary evil instead of a labor of love and plod along from day to day in a half comatousness because of inertia, or because of the lack of courage to sever the Gordian knot that binds them to a hateful task. No suggestions of any sort are applicable to the dentist who does not truly love his chosen profession.

The third requisite—that of practical application in conducting a dental practice—must of necessity be subdivided into many component parts. This and future articles will deal exclusively with the third requisite, assuming that the reader has, as a result of experience, acquired the other two.

Before we proceed, however, with an analysis of the many elements that enter into the third requisite, it is advisable that we pause first for an examination of ourselves. As a rule we spend entirely too much time in analyzing other people and hardly enough time for introspection. Most of us are thoroughly familiar with all of our neighbor's faults and (if we are a little broad-minded) also their virtues. W know their characteristics, habits, goc

* This is the first of a series of articles by S. J. Horn.

traits and bad traits. In fact, we know everything about everybody and little or nothing about ourselves. An ancient philosopher realized the value of self-analysis when he said, "Man, know thyself." Evidently this advice went unheeded throughout the centuries.

Every well-organized business institution goes in for a thorough self-analysis at the end of each year. They call it stock-taking or inventory, but in reality it is not only a matter of stock accounting of their merchandise, for they also examine the policies governing their general business conduct in order to discover wherein is the leakage. If they find that their merchandise is inferior to the competitive market, they immediately take steps to improve it. If the efficiency of their employees is not up to par, they are replaced. If the service rendered to their customers is faulty, they try to correct it.

The dental practitioner would be surprised to learn how much a thorough, unbiased self-analysis would reveal to him. In the first place, he may learn that his general business policy is antagonistic to his interests, that his fees are either too large or too small, that his credit and collection system is faulty and results in large losses, that his entire equipment is obsolete and gives the appearance of being part and parcel of a very struggling practitioner. Then, again, he may learn that his mannerisms are not exactly pleasing, that his gestures are not so graceful as they could be, that his smile lacks sincerity, and that his general behavior toward his patients can be considerably improved. In other words, let us submit ourselves to a fair and broad-minded criticism which will in a measure prevent others from criticizing us. But, in order to do that with the least amount of hindrance, let us once and for all discard our "blinders." As a rule only truck-horses wear blinders, because they become bewildered when they can see all about them—they are contented only when their view is limited to a single track. Thoroughbreds never wear blinders.

The world is constantly changing. In the present epoch especially, changes are taking place with bewildering suddenness. There is one type of man that is frightened by these changes. This type has always lived in a stolid habitual mode, arisen, eaten, worked, gone to bed, and did the same over again day by day, year in and year out. They have never left room in their minds for addition of any kind. They are what we call single-track minds. They are usually employees, always taking orders, never giving them. They have no initiative, no vision, no desire for a wider view.

Dentistry has progressed in the United States as nowhere else in the world because the American dentist as a class is ambitious and interested, not only in the routine of his practice but in the unusual events which can be associated with it. Had he been contented to apply exclusively the technic handed down to him by his predecessors, the dental office would not be what it is today nor would the dentist be nearly so effective in improving the oral condition of his patient.

And, yet, meeting every type of human being, one is bound to come across the truck-horse variety in every walk of life, even among dentists. That

sort of dentist is without self-esteem and wears the manner of the truck-horse because he does not consider himself a thoroughbred. He makes no effort to improve his practice that he managed to scrimp together in his complacent way. Patients are simply patients to him, not human beings possessing characteristic susceptibility. Therefore he adopts a certain stereotyped method of procedure with the patient in the chair. In each case he asks the same questions, gives the same answers, and repeats the same story in his health talks.

This, of course, is erroneous, because patients are landlords and janitors, ministers and atheists, plebeians and patricians. The stimuli to bring about results in the case of each must be widely different, both in tone and in manner. Every light having its own connection, one must definitely find the switch in order to light a certain lamp.

So, to begin with, let us discard all forms of "blinders," look about us and behold all within our vision, man's supreme all-embracing vision. Then, having feasted our eyes in full, let us go back and look into ourselves. What we will behold without and discover within will be worthy of our effort.

220 West 42nd Street

Investments for Dentists

By WALTER S. KYES, D.D.S., San Diego, Cal.

Seventh Article

In the nature of things there appears to be no well-defined plan which will absolutely preclude losses in investments and so it becomes a dangerous thing to advise a man as to how he should invest his money. The matter of investments takes on different aspects in different localities. Local conditions, which should govern the investment of savings in a given section of the country, and the men who are to control the concerns wherein we are urged to place our money cannot be studied at long range and therefore, as a rule, should be avoided. Battles are not wholly won by the use of guns and ammunition. These are important, of course, but by the experience and knowledge and skill of the men behind the guns the geography of continents has been changed. The same test applies to the men who are to control the money which we place at their disposal. If they are honest, possess the requisite knowledge and experience in business affairs, and are willing to apply that knowledge and experience in the successful promotion of the enterprise in which we happen to be interested, we should, by the law of averages, win. If they do not measure up to these requirements, we stand to lose. So before investing in any enterprise we should by all means know what and who the men are who will control our money after it leaves our hands.

There is no question that there are literally thousands of men and women

in this country today who keep themselves on a steady and lucrative payroll through the fraudulent and semi-fraudulent promotions which from time to time through devious ways, they unload on the gullible public.

The word *speculate* is in itself interesting. It means to "form conjectures regarding anything without experiment —to theorize." Speculation means, in a sense, a risky investment for large profit. The definition should deter us and put us on our guard.

Wildcatting is the last word in speculation, that is, the wildest and most reckless sort of conjecture without experiment. To the promoter it represents the easiest sort of easy money, provided he succeeds in keeping out of the clutches of the law. Putting an unscrupulous promoter in jail is much the same as cutting noxious weeds after they have gone to seed. The richness of the soil in which he flourishes always will, it seems, produce another of the same sort with the same untiring ambition to live without work.

Just as a parasite clings to the limb of a tree and thereby obtains the nourishment which enables it to exist, so does the peddler of questionable securities cling to the fringe of progress and grow sleek and fat. We always find him located just "adjacent to" or "proximating" or on the "outskirts" of a "proven field." If he strikes a bonanza or brings in a gusher, it is no fault of his own, but whether he does or not his income never ceases, except temporarily, and his clientele seems never to diminish. His chief stocks in trade are prospects and "suckers." He leads the public to speculate so that these prospects will mature into full-grown gushers or bonanzas, whichever the case may be, and, in the language of the street, the public "falls for it" to the tune of billions of dollars annually.

Back of the prospect in which the promoter deals largely is the prospector. His is an alluring and a romantic business. There appears to be a particular lure to digging wealth out of the ground. Possibly it is the "gambler's chance," the mystery of what lies beneath the next shovelful of earth or the riches that the next blast will uncover in the way of undreamed-of wealth, that makes the business so attractive. It is this gambler's chance that lures men into the remote quarters of the earth, into wild, fearsome places. We find their trails marked by prospect holes in the mountainsides or in the canyons of the waste places from Northern Ontario to Mazatlan, from Deadwood to Tonopah and from Sacramento to Nome. Grizzled, bent old men we may see, with their burros, climbing the steep places and crossing the burning sands of the southwest deserts with the phantom of riches ever before them, even to the end of life's trail. It is this same spectral phantom, this gambler's chance, that lures men to speculate in worthless mining and oil stocks and not infrequently to be fleeced through such operations.

Of the three persons involved the prospector stands by far the best chance to win. He is trained in his business. With the promoter it makes but little difference whether or not his prospect or his oil well matures into valuable property. He wins as soon as he gets our money. The investor or, rather, the speculator stands to lose at

a ratio of about three hundred to one. Thus the speculator is placed almost on a basis of trying to hatch chicks from unfertilized eggs.

One of the foremost mining and smelting men in America has been quoted as saying that his company, after investigating thousands of mining prospects scattered all over the country, has found that only about one prospect in three hundred is ever developed by his company into a successful mine. From the standpoint of the small investor this would make the matter of betting on the races look like a sure thing in comparison.

The subscriber for stock in any sort of promotion company should remember that in addition to paying the salesman's commission on the stock involved his money has to set the company up in business, which includes such items as furnishings for offices, rent, salaries (with the sky the limit, maybe), and such other expenses as might be involved in launching the business into a going concern. All of this happens before any actual development has been commenced, and is accounted for, where the matter of accounting is practiced, as organization costs.

Putnam's *Investment Handbook,* which every dentist in America should read, quotes figures to the effect that after one of the largest mining and smelting companies in this country had investigated 2,913 mines, only ten were accepted by the company. Such a casualty list should deter the most rampant speculator among us from listening to the lure of the promoter of infant industries or undertakings.

The writer once visited the Black Hills District in South Dakota, where one of the largest low-grade ore mines in this country is operated. In conversation with a mining man he was told that there had been more money put into prospects in that country than there was value in gold in the whole section. Ore dumps, prospect holes, rotting buildings and rusting machinery corroborated his statement. In other words, innocent investors had bought and paid for all of the gold in the hills, receiving nothing in return.

In New Mexico the writer also made the acquaintance of a mining man who took him into the mountains to show him a property which was just in the producing state. To the uninitiated the mine appeared to be a tremendous proposition. We walked into the heart of a mountain through a tunnel cut in solid rock. Inside a large cavern had been blasted out. Electrically operated pumps sucked up a great volume of water from the shaft below. Ore lifts came up with the regularity of clockwork. These were dumped into cars which were run out and dumped into trucks which hauled the ore to the railway station some three miles distant. In turn this ore was shipped to a smelter a hundred miles away. The development costs had been tremendous and the mine, at the then prevailing price of copper, was paying six per cent on a million dollars' valuation. The property was owned by three men and had been purchased from the prospector who located it for $18,000. Following the War and the consequent slump in the price of copper, the mine was shut down indefinitely. So much for the vicissitudes of legitimate mining.

Ore in paying qualities and quantities in the heart of a mountain or in the side of a canyon does in no way indicate investment possibilities for the small investor. It is a long journey from the prospect hole to the mint and the smelter and thence to the markets of the world. First, there are to be considered the tremendous development costs, which include the transportation of machinery into almost inaccessible places, the building of roads for that purpose and the furnishing of an adequate water supply for milling and other needs. The cost and installation of machinery, plus actual mining operation costs, the transportation of ores to railway connections, the smelting and refining, and finally marketing, all become too involved for the average person to comprehend or to engage in as a side line to the practice of dentistry or of any other profession of like character.

Of course it must not be inferred that there are no such things as legitimate mining undertakings. There are many companies who offer their stock for sale, together with a statement of their resources, their assets and their investment possibilities as to dividends and earning power and future outlook. However, such organizations are far removed from the promotions whose stocks are peddled from door to door by solicitors who are concerned merely about the collection of their commissions and turning the remaining balance over to the promoters.

812 Watts Building

[HOW TO SAVE]

Thrift does not mean that we should stop spending, but it does mean the ability to manage our money carefully or judiciously, spending less than we earn or saving systematically. To cultivate thrift we must learn to designate between luxuries and necessities and not let our judgment be swayed by the seeming pleasures of the hour.

—LAWRENCE.

PRACTICAL HINTS

THIS DEPARTMENT IS NOW BEING CONDUCTED FROM THE OFFICE OF THE DENTAL DIGEST. TO AVOID UNNECESSARY DELAYS, HINTS, QUESTIONS AND ANSWERS SHOULD BE ADDRESSED TO EDITOR PRACTICAL HINTS, THE DENTAL DIGEST, 220 WEST 42D STREET, NEW YORK, N. Y.

NOTE—Mention of proprietary articles by name in the text pages of THE DENTAL DIGEST is contrary to the policy of the magazine. Contributions containing names of proprietary articles will be altered in accordance with this rule.

Editor, Practical Hints:

About a month and a half ago I removed a lower left second bicuspid that was entirely embedded in the bone. It required a good deal of cutting, mostly with the drill, almost to the apex, as there was exostosis of the root and curvature. There was not any pain to speak of the next day, but the disagreeable thing is that the jaw from the mental foramen to the central tooth has been numb ever since. I have been washing the socket every other day. It has been quite a time healing, but there has not been any ulceration. I have noticed that when I touch the bottom of the socket she complains of a tingling sensation in the numb area. The gland opposite the socket has been stiff and swollen, so that it is somewhat higher than the ridge, making it impossible to take an impression. The gland is not sore at all. The patient uses hot applications inside and outside to bring the blood to that area.

I used alcohol on the drill quite often during the cutting. Do you think that has any influence on the nerve? Or, if the nerve was severed, will it ever unite again? T. T. M.

ANSWER.—It is very evident from your description that the mandibular nerve has been injured. Ordinarily this would regenerate in from a few weeks to a few months, but this process may be complicated by the alcohol. However, there is nothing that you can do to help nature. This is not an infrequent occurrence, and the case should be carefully explained to the patient.

Editor, Practical Hints:

I have a patient, male, married, aged 45, who has on an average of one canker sore a week on the gums, lips, tongue, under the tongue and in the throat. They are usually very large and painful. He has had them for twenty years, and his mouth is one mass of scars.

I have used all methods I know of without any results.

He has stomach trouble and is continually taking medicine from a physician for that. He is a farmer and is otherwise very healthy.

G. G. G.

ANSWER.—Canker sores are generally believed to be due to digestive disturbances, the cause of which should be up to the physician. It is probably

caused by a fundamental error in the patient's diet.

Editor, Practical Hints:

Some time ago I thought I saw in your column of Practical Hints a varnish or solution for exposed roots along the gum margin sensitive to the slightest touch.

Sometimes I have a patient with a very sensitive palate who can hardly have an impression taken or wear a full denture. What can I use to paint the palate with to stop the gagging?

R. H. B.

ANSWER.—The best local application for sensitive teeth is silver nitrate, the use of which is limited because of the color produced. On anterior teeth either formalin or chlorid of zinc may be burnished into the sensitive areas. When the sensitiveness is not due to direct abrasion, the administration of five grains of calcium lactate three times a day plus a generous daily intake of Vitamin A will result in a marked improvement after several weeks.

In taking an impression for a patient with a sensitive palate, swabbing the area with novocain or a similar preparation will generally overcome the difficulty.

Editor, Practical Hints:

Since the coming of artesian wells into our section of the country, our young people and children are afflicted with a brown stain on their teeth. A method of removing this brown stain will be greatly appreciated.

No. DAKOTA.

ANSWER.—Considering the locality and the artesian-well water, which you believe to be the etiologic factor, I would suspect that the brown stain is in reality a case of mottled teeth.

The teeth should be carefully examined for defective enamel. If this brown color is a true case of mottled teeth, then there is nothing that can be done. Further cases might be prevented by changing the water supply.

Editor, Practical Hints:

What flame is considered the best for melting precious metals preparatory to casting?

What gas or combination of gases is considered best for this purpose?

What is the best treatment for the casting and the residual gold after casting is completed?

O. E. R.

ANSWER.—Chayes in his book advises the use of city gas mixed with nitrous oxid until a hot blue flame about ¾ inch long is produced. This should melt the gold in from 30 to 60 seconds.

After the casting has been made, it is placed for several hours in a rubber cup containing hydrofluoric acid and is then washed and brushed with soap and water. The casting is boiled in a saturated solution of sodium bicarbonate to neutralize the acid.

Surplus buttons should be refined before being used again. The practice of using old buttons and scrap gold of unknown karat will not give the best results.

Editor, Practical Hints:

Could you advise me as to the cause

and remedy of annoying creaky sounds in the mouth during mastication? One of my patients complained of this after the insertion of a large D. O. amalgam filling in the upper left first molar, and she claims that the filling creaks. The filling is firm and solid.

I deepened the sulci and improved the carving. This helped some, but did not remedy it altogether.

L. D. K.

ANSWER.—It is probable that the filling is still too high, perhaps not in central occlusion but during the lateral excursions of the jaw. A careful check-up will without doubt remedy the trouble. If the creaking still persists, a gold inlay would be indicated.

Editor, Practical Hints:

I should like your advice as to the best possible thing to be done in regard to the case of which I enclose x-rays.

The patient, a young girl, 23 years of age, a teacher of physical training, presented with the following history:

About two years ago her weight began dropping gradually from 124 to 106 pounds, her present weight. Since that time she has had physical examinations periodically and has been advised to take plenty of rest, which she has done, but she has failed to gain, although at one time her weight was up to 113 pounds, after which it again slipped back.

Although weight alone may not be an infallible index of health, do you think that the central and lateral incisor teeth could have anything to do with keeping the patient from gaining in weight?

About March a fistula appeared between the lateral and the central, and treatment has been carried on in the lateral since that time.

I have come to the conclusion to extract both teeth, but because of her vocation I should first like to obtain your opinion as to whether either of them could be saved.

E. J. G.

ANSWER.—From the position of the area as shown in the x-ray it is very doubtful whether any satisfactory results could be obtained by root-canal work. Consequently extraction would be the only sure way of clearing up the area.

Loss of weight might very easily be due to an infection such as exists between the central and the lateral, but extraction does not always result in physical improvement, and the patient should be prepared for this eventuality. The consequences of many radical operations have been most discouraging.

Perhaps it would be better to eliminate first all other possible foci of infection such as tonsils, accessory sinuses, etc.

Editor, Practical Hints:

I have had some difficulty in diagnosing a condition in a patient of mine, therefore I am sending you a history of this patient and possibly you can give me some help.

The patient is a young lady who at the age of 21 years had very few cavities. It seems that the following six weeks after reaching the age of twenty-one there occurred 21 cavities. Her

occupation is teaching home economics. She is now 25 years old, and the decay still continues in spite of all the precaution we have been taking. Her diet has been exceptionally well balanced, health perfect, appetite very good, and her weight is 170 pounds.

There are no devitalized teeth, for all of them have been tested for vitality. She has her full complement of teeth, her tonsils have been removed, and the deciduous teeth were perfect. She comes from a family of six children, and all, comparatively, had very little dental trouble.

The teeth are always extremely sensitive to heat, cold, sweet and sour, and even when biting on hard morsels of food. The sensitiveness has been of four years' standing, and the severity is increasing. Her mouth has a lack of saliva, which is thick and ropy but neutral. The posterior teeth seem to be more sensitive buccally and labially in the location of the glands and are very sensitive to cold air. In fact, all the teeth seem to be sensitive, those without fillings as well as those with fillings. We know that the patient has a deficiency of calcium.

Could you give me any information as to how we may eliminate this sensitiveness and decay?

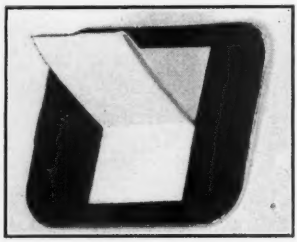
A. J. P.

ANSWER.—It would be difficult to say just what is the cause of the case you present. It would seem as if there was a serious disturbance in metabolism, though it appears to show nowhere except in the mouth.

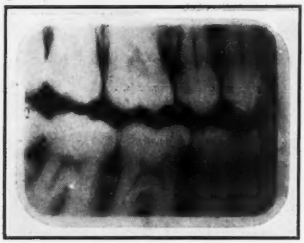
It would seem advisable to have her consult a physician and have a thorough physical examination as well as a check on her diet.

We shall publish your letter in the hope that some of our readers may furnish some valuable suggestions.

BITE-WING FILM.—I am enclosing an easily made bite-wing film. This idea works finely and may help some of the others to keep down their overhead.



A bite-wing film made from an ordinary x-ray film by pasting heavy paper in the manner shown.



Results obtained by the use of this bite-wing film.

Bite-wings cost about $1.75 per dozen and the regulars about 60c. I also find that the regular bite-wing film usually presents a pale picture unless the time of exposure is prolonged.

GILBERT H. RIDDLE.

CORRESPONDENCE

Editor, THE DENTAL DIGEST:

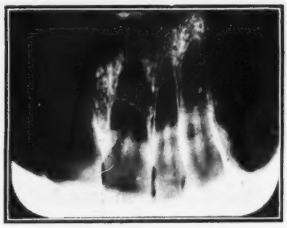
I am enclosing a tooth or, rather, two teeth which I removed from a patient this past week who was born in Denmark in the year 1852. He is of Eskimo descent. There was no trouble

removing it. The root was loose from infection, which spread around the impacted part so much that the process was pretty well destroyed.

P. J. CAMPBELL.

Editor, THE DENTAL DIGEST:

I am enclosing an x-ray of a case which is rather interesting. The young man has two left laterals perfectly developed. The most interesting thing to me about the case is that the upper left central has a fractured root of



some six years' standing, caused by receiving a blow while playing football. Under the electric test the response was favorable.

E. R. STEALY.

Editor, THE DENTAL DIGEST:

I am enclosing an x-ray that might be of interest to the profession if placed before them in THE DENTAL DIGEST.

The patient, a girl, 14 years old, has her left deciduous lateral and cuspid; the right side has both normal permanent teeth present. You will note that the cuspid is somewhat impacted, but I believe that it would come down in a somewhat normal position if the deciduous teeth and the impacted

permanent lateral were removed. (The mother would not let me do this for the daughter.)

But the thing of interest (something that I cannot find a duplicate of in Osgood, Raper or McCoy) is that the lateral incisor is distal to the cuspid and is pointing upward, i.e., the crown is going toward the nose and the root toward the gum line. Therefore the lateral also would have to be extracted.

W. B. LEE.

DENTAL SECRETARIES and ASSISTANTS

Secretaries' Questionnaire

All communications should be addressed to Elsie Pierce, care of THE DENTAL DIGEST, 220 West 42d Street, New York, N. Y.

NOTE—HAVE YOU A BETTER WAY? HAVE YOU A TIME-SAVING SHORT CUT? DO YOU KNOW A "STUNT" THAT LIGHTENS THE WORK OR MAKES FOR GREATER EFFICIENCY IN THE OFFICE? IF SO, WRITE TO ELSIE PIERCE. YOU MAY HELP MANY GIRLS WHO ARE BEGINNERS—AND YOU KNOW HOW YOU NEEDED HELP DURING YOUR FIRST FEW MONTHS IN A DENTAL OFFICE. PERHAPS YOU NEED HELP NOW. WRITE TO ELSIE PIERCE—SHE WILL HELP YOU.

Dear Miss Pierce:

I read the Questionnaire with interest each month, and I wonder if I may add a query or two.

The water in our little city is extremely hard and leaves a deposit on the cuspidor which it is difficult to remove. About the only way I have found is by scraping, and I am afraid I may be making things worse by leaving scratches where the deposit may get a firmer hold. I have tried a 10% solution of oxalic acid with little success. Can you suggest anything more effective?

Another more personal question I should like to have your advice upon. I wear a white uniform and shoes. I find it necessary to be upon the street occasionally on errands to neighboring offices, etc. Do you see anything improper in going in my uniform? This is a city of approximately 12,000, and there are several other assistants, but none of them wears a complete outfit of white. They wear uniforms and are seen upon the street in them.

I. L. M., Nebraska.

ANSWER.—The hard-water problem is one not easy to solve, as of necessity the water is constantly running in the cuspidor during the day, the deposit settling around the depression at the sides of the bowl. I would suggest coating the area affected with a thin film of paraffin applied hot. When cold it is not visible in a white bowl through the running water and will act as a protection to the porcelain.

Here is another suggestion which may help you. Get a plug to stop up the drain from the bowl, make a strong solution of borax water and leave it in the bowl all night. This should soften any deposit which may adhere to the bowl. Or secure any of the prepared hard-water softeners on the market and leave on all night.

If any of our readers have a better

solution, we should appreciate hearing from them.

Regarding wearing a uniform on the streets, it is not considered good form by the registered trained nurse to wear a uniform on the street, unless completely covered by a coat or cape, and I believe this is correct. A white uniform is the badge of one's professional dignity as well as a garment of service for the work one is doing. A surgeon would not wear his apron or gown on the street, or a dentist his coat or gown. The dental nurse or assistant is a professional woman in her specialty, therefore she should look upon the wearing of a white uniform as a special indication of the service she performs, to be worn in the office and not as a street costume, unless fully covered and protected by a coat or cape, and this I should say only for short distances and in emergencies.

Dear Miss Pierce:

I have found your articles very interesting. I have been employed in an office for two years. I do the bookkeeping, make models, develop x-rays, and do everything else in an office of this kind. I should like to know what you consider a fair salary.

A. O., Michigan.

Answer.—Salaries depend upon the willingness of the dentist to pay for service rendered, plus the type and quality of service performed by the assistant. Some dentists recognize that cheap service is a liability and well paid service an asset. Some dentists prefer to get along with inexperienced, incompetent girls in their offices, and others require women of experience and ability. The assistant in a small city or town does not receive so large a remuneration as one in a large city, where living conditions are more expensive. There are so many personal equations surrounding the service of dental assisting that one cannot expect to have any fixed scale of remuneration.

A dental assistant is not a clock-puncher, employed at so much an hour. She is a professional individual, dispensing professional service, and in comparison with her ability, earnestness and integrity will her earning capacity be, always provided she is associated with a dentist who appreciates the aforementioned qualities.

We are sorry we cannot quote a figure in response to your query, but we have no basis for comparison of figures.

Dear Miss Pierce:

I find after mixing lime water in an aluminum pan that a stain has remained. Can you tell us how to remove this? Thank you for this and previous helpful hints.

O. M. B., Conn.

Answer.—When cooks desire to remove discoloration from aluminum kitchenware, they cook tomatoes or sour apples in it. Have you tried any of the preparations on the market for polishing aluminum? We regret we cannot give you a specific remedy.

Aluminum is very porous and takes up stain readily, especially if an alkalin content is used. We always recommend that all utensils used around a dental office be of white

enamel. They look better and can be kept clean easily.

Dear Miss Pierce:

Can you tell me of a solution to use for lubricating handpieces that will not run oil? I run them in machine oil, then use a sterilizing solution of the following:

Four oz. of Three-in-One oil, 4 oz. of benzine, 3 drams of wintergreen.

I run the handpieces through this solution, but it does not clean all the oil out, and it stains the dentist's hands and the patient's mouth. Perhaps this will help some other assistants, as the questions I read in THE DENTAL DIGEST help me.

M. L. W., S. Dak.

ANSWER.—We suggest that you try the following:

Secure a heavy mineral oil or ordinary vaseline and place in a shallow enamel pan that will hold the handpieces a sufficient amount to cover when heated. Place over the Bunsen burner and heat to the smoking point, then allow to cool so as to handle without burning. Place the handpieces upright in a container sufficiently tall to hold them in position, allow to drain, then wipe excess off with sterile gauze. Before using, wipe off with pure alcohol. The hot oil or vaseline sterilizes as well as lubricates, and when handpieces are cold, should there be a little excess adhering to the inside of the barrel, it does not "splash" out.

Dear Miss Pierce:

I am employed as a dental assistant and, finding the work very interesting, I should like to take a one-year course in dental hygiene. I should appreciate your counsel as to what school to attend and its requirements.

P. R., New York.

ANSWER.—A letter to the School of Hygiene, Dental Department, Columbia University, will bring you full information as to their course. You can also get in touch with Temple University and the University of Pennsylvania at Philadelphia, Pa. Both these colleges have departments in their dental schools for the training of hygienists.

Dear Miss Pierce:

I have found a very effective solution for the removing of iodine stains from linen, uniforms, and even woodwork and linoleum, in the developing solution used for x-ray work. Dip the spot in the solution until it disappears. If the stain is stubborn, a little rubbing will help.

F. L., New York.

ANSWER.—We appreciate your interest and help. No doubt this will aid many of our readers.

Dear Miss Pierce:

What can I do to remove rust stains from the sterilizer? I have tried several cleaning solutions and used tablets in the water, but they do not seem to help.

I look forward each month to your magazine. I always enjoy reading it, and it has helped me in many ways.

M. H. D., Mass.

ANSWER.—If the sterilizer has become corroded, it will have to be refinished. Nothing you use will pre-

vent rust attaching to the corroded places.

A sterilizer should be cleaned and polished every day. Use fresh water daily. Have you tried two or three drops of mineral oil or vaseline in the water? You can use also a little borax or bicarbonate of soda to prevent rusting.

Do not use too abrasive a material for polishing and cleaning. Almost any household cleanser on the market and nickel polish should do the trick. It is not so much what one uses as the effectiveness with which it is used. A little attention each day is far better than a lot of attention once a week.

Educational and Efficiency Society for Dental Assistants, First District, New York, Inc.

A regular meeting of the Educational and Efficiency Society for Dental Assistants, New York, was held at the Academy of Medicine, New York, on Tuesday, October 15, 1929. The essayist of the evening was Dr. Martin Dewey, President of the First District Dental Society of New York, who spoke on *Dental Assistants in Relation to Malpractice Suits.* The second speaker was Miss Sylvia Danenbaum, a member of the Society, who discussed the dental assistants' societies, the application of ethics in their management, and the value of society activities to the assistant, to the dental profession and to the laity.

The Society was honored by the presence of several visitors, officers of the American Dental Assistants Association: Misses Louise Shultz, Aloise Clement, Nebraska; Mary O'Connolly, Cincinnati, Ohio; Maurine Vail, Mrs. Florence Waller, Kansas City, Mo. Each spoke briefly of the convention at Washington, D. C., during the week of October 7th. Other speakers were Agnes F. MacNeil, President of the Dental Assistants Association of New York State; Juliette A. Southard, President of the American Dental Assistants Association, and Dr. Henry Fowler, Honorary Member of the Society.

The Educational and Efficiency Clinic Club has held two meetings since the inception of the 1929-1930 season. On September 16th a lecture on orthodontic assistance was given by Dr. S. Abraham. The speaker told of the importance of records in orthodontia, showing various ways of keeping them, and the responsibilities of the assistant in this phase of the work. At the October 21st meeting Dr. M. Russell Stein spoke on *Phases of Psychology,* defining psychology and explaining its uses in the dental office, particularly in the treatment of children. The work of the Secretarial Section of the Clinic Club was demonstrated by a member. The secretarial duties of the dental assistant were explained and several systems of bookkeeping, record-keeping, filing, types of stationery and appointment books and other acces-

sories in this part of the calling were shown. The Club meets regularly on the third Monday evening of each month, September to May, inclusive, to study the various aspects of dental assisting and to form table clinics for presentation before dental assistants' societies and dental societies. At the Mid-Winter Meeting of the First District Dental Society in December members of the Club will demonstrate secretarial procedure, the preparation and sterilization of gauze swabs and other surgical accessories, and economy suggestions. Clinics will be presented also before the Kings County Dental Society in January, 1930.

A class in x-ray technic is now in session. Instruction includes the care of the x-ray machine, the storing of films, the developing, mounting and filing of x-rays, as well as the interpretation of radiographs. Additional classes are being organized, including sterilization, speaking and parliamentary procedure, anatomy of the head, sharpening of instruments, and other subjects relating to dental assisting. These are free to members of the Society and are held one evening each week under the supervision of competent teachers.

Membership is open to dental assistants employed in ethical dental offices. The Society meets regularly on the second Tuesday evening of each month, October to May, inclusive, at the Academy of Medicine, New York. Ethel R. Meyerson, President, may be addressed at 1673 University Avenue, New York.

The next meeting will be held on Tuesday, December 10, 1929. A cordial invitation to attend is extended to the members of the dental profession and to their assistants.

BOOKS RECEIVED

A BOOK MAY BE AS GREAT A THING AS A BATTLE—DISRAELI

Outline of Bacteriology, by Henry A. Bartels, B.S., D.D.S., Lecturer on Bacteriology, School of Oral Hygiene, Columbia University; Instructor, Department of Oral Pathology, School of Dental and Oral Surgery, Columbia University; Attending Dental Surgeon, Bryson Day Nursery; Assistant Bacteriologist, Division of Laboratories and Research, New York State Department of Health; formerly Bacteriologist, United States Public Health Service.

This book is the outgrowth of lectures given before the students of oral hygiene at Columbia, and as a means of giving a non-technical idea of the subject to the lay person it may be of value. But for those who are actively interested in the practice of dentistry there are other books on the subject that will have a far greater appeal.

125 pp., with 47 illustrations and index. New York, N. Y.: William Albert Broder, 1929.—A. M. J.

Fundamentals of Pathology, by Joseph Schroff, B.S., M.D., D.D.S., Associate Professor of Oral Pathology, School of Oral and Dental Surgery, Columbia University; Dental Surgeon in charge of Oral Surgery, Mt. Sinai Clinic; Consulting Oral Surgeon, Jewish Memorial Hospital; Attending Oral Surgeon, German Polyclinic Hospital; former Assistant Attending Oral Surgeon, Presbyterian Hospital; former Assistant Attending Oral Surgeon, Vanderbilt Clinic, New York.

A very brief presentation of pathology based on lectures given to students of oral hygiene at Columbia University. The fundamentals are given in an incomplete manner, and the greater part of the book deals with the clinical aspects of certain diseases.

104 pp., with 40 illustrations and index. New York, N. Y.: William Albert Broder, 1929.—A. M. J.

The Business Conduct of an Ethical Practice, by S. Joseph Bregstein, D.D.S., Attending Periodontist, Unity Hospital, Brooklyn, N. Y.; formerly Periodontist, Samaritan Hospital, Brooklyn; Lecturer on Dental Economics and Writer on Professional Business Management.

In the preface the author acknowledges his indebtedness to other sources for some of his information and material, and for those who have done much reading on dental economics and the conduct of practice very little will be found that is new. The book as a whole may be taken as a summary.

It must be constantly borne in mind that no one system is applicable to all practices, and this is stressed by the author. Different types of patients require different handling, and it is the man who knows how to make exceptions to rules who, in the end, gets along best and with the least amount of trouble.

For the man who has not the slightest idea how to conduct a practice—and the number is probably large—this book will serve as a guide and reference.

126 pp., with illustrations and index. Brooklyn, N. Y.: Dental Items of Interest Publishing Co., Inc., 1929. —A. M. J.

Paul Adams, a novel of an American Dentist, by S. J. Horn.

To some men this tale will seem a gross exaggeration, to others it will appear as only too true. How many men have left school with high ideals of service and seen them shattered under stern necessity and a misunderstanding public!

Paul Adams came from a line of distinguished dentists and graduated with the intention of giving his best to the public. He opened his own office and waited in vain for enough patients to give him a living. The few who came he drove away because he was not willing to do the kind of work they desired. Next he associated himself with a highly ethical practitioner and fared little better.

He descended to an advertising office and then entered the commercial field, but in spite of financial success he was not satisfied and returned to practice.

The book is a presentation of certain conditions in dentistry. The fact that it is fiction does not make it any the less truthful or forceful. It is easy reading and may cause no small amount of thinking.

New York, N. Y.: Benedict Publishers, Inc., 1929.—A. M. J.

EXTRACTIONS

No Literature can have a long continuance if not diversified with humor—*ADDISON*

Sunday is now a day in which we get bawled out either by a preacher or a traffic cop.

Did you hear the story about the Scotchman who went over to the Black Sea to fill his fountain pen?

Said an Irishman: "This wud be a deloightful wurruld if it wussent for our pleasures."

(Dentist to his Vicar in the chair)—After your powerful sermon last Sunday on the "Beauty of Truth," I cannot tell a lie. This operation is going to hurt you.

(Bildad)—Why do you carry that rabbit's foot about with your money?

(Joblots)—For luck.

(Bildad)—Had any yet?

(Joblots)—Yes. My wife put her hand in my pocket last night and thought it was a mouse.

AND HOW!

Women's faults are many,
Men have only two:
Everything they say
And everything they do.

It has just been discovered that at a State Fair in a western state the management lost more than a $1000 by women in short skirts making their entrance at the children's gates.

SAILORS GO EVERYWHERE

"Traveled!" said a sailor in a train to a passenger who had questioned him. "I should think I 'ave. I've been all round the world; over an' under it, too. There ain't many ports I don't know the inside of.

"Why, you must know a lot about geography."

"Yes, we did put in there once, but only to coal the ship. "Tain't much of a place, what I remember of it."

(Banker)—Did you ever know why the Coliseum in Rome never paid dividends?

(Broker)—Yep. It was because the lions ate up all the prophets.

Down by the dismal swamp
They heard him holler.
Heated and moist he was
Under the collar,
For that new ball he'd lost
Cost him a dollar.

The rain falls, but it gets up again in dew time.

LOOKS ALL RIGHT

Now that we have beauticians and morticians, would it be all right to label a dentist a dentician?

There was a young woman named Banker,
Who slept when the ship came to anchor.
She awoke in dismay when she heard the mate say:
"Hoist up the top sheets and spanker!"

Adolph Sax, inventor of the saxophone, during his lifetime was knocked down a flight of stairs, swallowed a pin, was burned twice, drank poison, was nearly asphyxiated, and later on was blown up in an explosion. His grievances were many, but he managed to even the score with the world.

(Judge—sternly)—Counsel for plaintiff will state why a divorce is asked for in this case.

(Counsel)—Your honor, this man beat up his wife several times and even threw her down stairs; he set his German police dog on her brother when he visited the family, and he put mice in his mother-in-law's bloomers.

(Judge)—We will postpone this case for final settlement until two o'clock next week.

The absent-minded professor was off form this morning. He did not try to eat his newspaper and read his toast, did not rush out of the house with misplaced garments, did not go along in the rain holding a cane over his head, did not give the trolley conductor an aspirin tablet, etc., etc., etc. You see, he had forgotten to get up.

AND THINKING MAKES IT SO

A lady called on her dentist one morning in great distress and suffering terribly. It appeared she had swallowed a partial denture. A doctor was summoned by phone, and meantime the dentist gave her porridge in which pieces of chopped wool had been stirred. The acute intestinal pains made the lady groan in anguish. A ring at the door-bell was thought to be the doctor arriving. No! it was a maid to say she had found the denture under the lady's bed! Imagination and an empty mouth upon awakening had been the cause of her intense pain.

FUTURE EVENTS

EASTERN DENTAL SOCIETY OF NEW YORK

Scientific Session

Thursday Evening, December 5, 1929

Meets the first Thursday of each month from October, 1929, to May, 1930.

Meeting Place: 425 Lafayette Street, New York.

Essayist: Henry Gillett, Professor of Operative Dentistry, Columbia University.

Subject: *Management of Cavity and Cast Inlay Margins.*

Round Table Discussions (In Amphitheatre): 8:15 P. M. Sharp.

Subject: *Gold Inlays.*

Leader: Leroy L. Hartman, Head of Operative Department, Columbia University Eastern Dental Progressive Clinics.

A series of clinics covering the subject of *Gold Inlays* in detail will begin promptly at 7:30 P. M.

Clinicians

Louis I. Abelson	Roy D. Ribble
Lawrence Dunn	J. Schleimer
S. Charles Gardner	H. Seides
Charles Goodman	Simon Shapiro
I. A. Press	William A. Spring

Henry Wasserman

GREATER NEW YORK DECEMBER MEETING FOR BETTER DENTISTRY

Plans are rapidly approaching completion for the *December Meeting for Better Dentistry* which will be held at the Hotel Pennsylvania, New York, December 9-13, 1929, under the auspices of the First and Second District Dental Societies. This is the Fifth Annual Meeting and bids fair to be the largest and best which has thus far been held. The clinic program for the registered clinics will be ready for distribution about November 15th and, owing to the growing popularity of this meeting, it will be advisable to make reservations as early as possible.

The meeting will be conducted on the same plan as previous meetings, i.e., one fee admits members to all lectures, clinics, etc.

The following essayists and clinicians have accepted invitations to be present: Chalmers J. Lyons, Ann Arbor; Emory C. Thompson, Buffalo; J. R. Clayney, Austin F. James, John La Due, Joseph L. Ube, Chicago; Hugh W. MacMillan, Carlos H. Schott, Cincinnati; Theodore W. Maves, Cleveland; P. Kyprie, Charles A. Lane, Albert L. LeGro, Detroit; Dayton D. Campbell, Kansas City; Matthew N. Federspiel, Milwaukee; R. Boyd Bogle, Nashville; James H. Prime, Omaha; Wallace Seccombe, Toronto.

There will be a manufacturers' exhibit in the Roof Garden and Salle Moderne of the hotel during this meeting.

THE KINGS COUNTY DENTAL SOCIETY will hold its December meeting at the Building of the Medical Society of the County of Kings, 1313 Bedford Ave., Brooklyn, N. Y., on Thursday, December 12, 1929, at 8:30 P. M.

S. Marshall Weaver, D.D.S., of Western Reserve University, Cleveland, Ohio, will speak on the *Comparison of Bone Structure Under Movable-Removable and Non-Movable Restorations,* demonstrating the design and construction of movable-removable and non-movable restorations. This will be illustrated with slides showing practical cases before and after treatment, saddle design and detailed construction.

The discussion will be opened by Herman E. S. Chayes, D.D.S.

At 3:00 P. M. Dr. Weaver will conduct a table clinic showing duplicates of practical cases and high spots in the methods of construction of attachments and saddles, as well as a new method of stabilization.

At 7:30 P. M. the following clinics will be held:

Movable-Removable Bridgework, by Milton Cohen, D.D.S., Clinical Professor of Ceramics, New York University School of Dentistry.

Removable Partial Restorations, by Amshel Gueft, D.D.S., Clinical Professor of Crown and Bridgework, New York University School of Dentistry.

Technic for the Construction of a Simple Chayes Bridge, by M. Diamond, D.D.S., Assistant Professor of Operative Dentistry, School of Dental and Oral Surgery, Columbia University.

Jacob Shapiro, *President,*
Charles Ogur, *Chairman,*
Educational Committee.

THE DENTAL PROTECTIVE ASSOCIATION OF THE UNITED STATES will hold its annual meeting at the Palmer House, State

and Monroe Streets, Chicago, Ill., on December 16, 1929, at 4:00 P. M. The reports of the officers will be given, a Board of Directors will be elected, and such other business as should come before the Association will be transacted.

All members are urgently requested to be present.

J. G. REID, *President,*
D. M. GALLIE, *Vice-Pres. and Treas.,*
E. W. ELLIOT, *Secretary.*

THE WESTCHESTER DENTAL SOCIETY will hold its third scientific session of the season on Tuesday evening, December 17, 1929, at the Community Center, South Broadway and Guion St., Yonkers, N. Y.

M. Hillel Feldman, D.D.S., of New York, will discuss *The Consideration of Surgical Conditions of the Mouth Within the Scope of Practice of the General Practitioner.*

The session will be open to all ethical practitioners.

THE CHICAGO DENTAL SOCIETY

SIXTY-SIXTH ANNUAL MEETING AND CLINIC

JANUARY 13-15, 1930

The Chicago Dental Society wishes to announce the 1930 Annual Meeting and Clinic at the Stevens Hotel, where full provision is made for the comfort of all those in attendance. The experience of conducting the 1929 Meeting at the Stevens has provided a basis for conducting the next meeting, which without doubt will reflect in a substantial measure the increasing importance of this annual event.

All members of the American Dental Association are cordially invited to attend. Preliminary programs will be mailed to all members of the A. D. A. some time in December of this year. The program will be divided into eight sections, as follows:

Section I—Operative Dentistry.
Chairman: Frank G. Conklin, 4010 West Madison St.
Vice-Chairman: A. E. Schneider, 25 East Washington St.

Section II—Full Dentures.
Chairman: E. C. Pendleton, 916 Galt Ave.
Vice-Chairman: S. A. Hutt, 3166 Lincoln Ave.

Section III—Partial Dentures; Crown and Bridge.
Chairman: W. I. McNeil, 59 East Madison St.
Vice-Chairman: R. A. Jentzsch, 185 North Wabash Ave.

Section IV—Oral Pathology, Histology, Bacteriology and Chemistry.
Chairman: J. R. Blayney, 2209 Rosemont Ave.
Vice-Chairman: W. G. Skillen, 311 East Chicago Ave.

Section V—Mouth Hygiene and Public Health.
Chairman: Lon W. Morrey, 4235 North Hermitage Ave.
Vice-Chairman: Corvin F. Stine, 1319½ Estes Ave.

Section VI—Orthodontia.
Chairman: Abram Hoffman, 311 East Chicago Ave.
Vice-Chairman: Harris W. McClain, 55 East Washington St.

Section VII—Oral Surgery and Radiography.
Chairman: Roscoe L. Stout, 55 East Washington St.
Vice-Chairman: Joseph G. Wiedder, 25 East Washington St.

Section VIII—Dental Economics.
Chairman: Harold S. Smith, 180 North Michigan Ave.
Vice-Chairman: F. van Minden, 185 North Wabash Ave.

The Program Committee is under the direction of Stanley D. Tylman, assisted by Henry C. Lee, E. C. Pendleton and Roscoe L. Stout.

The manufacturers' and dealers' exhibits will be held in the spacious Exhibit Hall, one flight down from the main floor. All applications for exhibit space should be directed to Dr. C. Davidson, Chairman Exhibit Committee, 55 East Washington St., Chicago, Ill.

HUGO G. FISHER, *President,*
HOWARD C. MILLER, *Secretary,*
55 East Washington St., Chicago, Ill.

THE NORTH DAKOTA STATE BOARD OF DENTAL EXAMINERS will hold its next meeting at Fargo, N. D., January 14-17, 1930. Applications for examination must be in the hands of the Secretary by January 4, 1930.

GILBERT MOSKAU, *Secretary,*
Grand Forks, N. D.

THE DELAWARE STATE BOARD OF DENTAL EXAMINERS will hold its next meeting in the Municipal Bldg., Tenth and King Streets, Wilmington, Del., January 22-23, 1930, from 9 A. M. to 5 P. M.

For further information, address

W. S. P. COMBS, *Secretary,*
Middletown, Del.

THE PENNSYLVANIA STATE DENTAL SOCIETY will hold its Mid-Winter Meeting January 30-31, 1930, at the Penn-Harris Hotel, Harrisburg, Pa. A splendid program is being prepared.

RICHARD D. CROWLEY,
111 North Second St., Harrisburg, Pa.

THE DALLAS MID-WINTER DENTAL CLINIC will be held in Dallas, Texas, February 10-12, 1930.

Clinicians: George M. Hollenback of Los Angeles, crown and bridge; R. O. Schlosser of Chicago, prosthetics; Thomas P. Hinman of Atlanta, surgery; W. J. Charters of Des Moines, periodontia.

Brooks Bell, Jr., D.D.S., *Sec'y,*
1810 Medical Arts Bldg.,
Dallas, Texas.

THE MINNESOTA STATE DENTAL ASSOCIATION will hold its forty-seventh annual meeting in the Auditorium, Minneapolis, Minn., February 26-28, 1930. A cordial invitation to attend is extended to all members of the American Dental Association.

Geo. D. Estes, *Secretary,*
911 Medical Arts Bldg.,
Minneapolis, Minn.

THE CENTRAL PENNSYLVANIA DENTAL SOCIETY will hold its twenty-eighth annual meeting in Altoona, Pa., February 26-28, 1930, at the Penn Alto Hotel.

R. L. McKim, *President,*
Osceola Mills, Pa.
J. G. Shaffer, *Chairman,*
Local Arrangements Committee,
1200 14th Ave., Altoona, Pa.

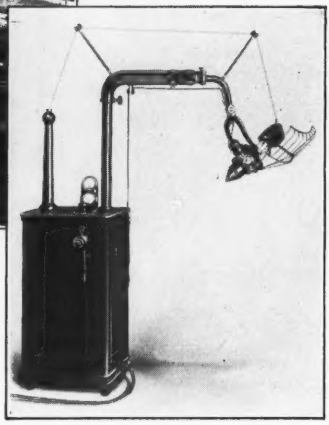
THE ALABAMA DENTAL ASSOCIATION will hold its sixty-first annual meeting in Montgomery, Ala., April 15-17, 1930.

F. F. Perry, *Secretary,*
Montgomery, Ala.

THE MASSACHUSETTS DENTAL SOCIETY will hold its annual meeting at the Copley-Plaza Hotel, Boston, Mass., May 5-9, 1930.

Thomas K. Ross, *President,*
280 Main St., Fitchburg, Mass.

Philip E. Adams, *Secretary,*
236 Newbury St., Boston, Mass.



The Health of Your Community is in Your Care, Doctor!

EVERY dentist knows that many chronic ailments are directly traceable to an unhealthy condition of the oral cavity. Therefore correct diagnosis of such cases is essential to the well being of the patient.

You cannot be sure of a correct and complete diagnosis without the evidence offered by the X-Ray. Your duty to the community you serve demands that you give your patients complete dental service by installing X-Ray equipment. And besides, the X-Ray earns you additional revenue with surprisingly little overhead.

The Ritter X-Ray assures positive results, since all variable factors have been eliminated. Portability and simplicity of operation are other features which make the Ritter X-Ray the logical choice for the efficient and progressive dentist. Write for our new X-Ray booklet today. Ritter Dental Mfg. Co., Inc., Rochester, N. Y.

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KERR
REG. U. S. PAT. OFF.

Perfection Impression Compound

Kerr Perfection Impression Compound facilitates accurate, natural, comfortable and efficient restorations, and is indispensable to the Prosthetist in imitating Nature.

Made in Regular Cakes, Tracing Sticks and Wafers for Your Convenience

Kerr Perfection Impression Compound Cakes

Test Impression taken in Kerr Perfection Impression Compound Showing Complete Muscle Trimming

Kerr Perfection Impression Compound has the essential qualities that make it possible to obtain the desired results in impression taking, no matter how difficult the case may be.

By the Greene System of Impression Taking you will eliminate all the guess-work and know by actual tests In Advance what the resultant outcome will be. Booklet giving this information sent on request. It's free!

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Snow White Plaster

Kerr Snow White Plaster is made from selected material, which is ground extremely fine and processed to give a plaster that is dense, hard, breaks clean, and imparts every detail and an exceptionally smooth surface.

No. 1 Plaster

Natural Setting about 18 minutes

An all-around Plaster for models, vulcanizing, impressions, and general purposes.

No. 2 Impression Plaster

Rapid Setting 5 minutes

An Impression Plaster scientifically prepared to set accurately in five minutes.

The quality of Kerr Snow White Plaster is standardized, tested and dependable. Put up in 10-pound tin cans and 100 and 250-pound steel drums, which are securely sealed against dirt, dampness, etc.

FOR SALE BY LEADING DENTAL DEPOTS

DETROIT DENTAL MFG. CO.

6081-6095 Twelfth St. **DETROIT, MICH., U.S.A.**

Every Dentist Knows the Importance of Oral Hygiene

Every dentist knows that decay of the teeth is retarded when the mouth is kept hygienically clean. Every dentist knows how much pleasanter it is to work in a mouth that had been cleansed and treated so that no unpleasant residues or odors exist.

Some dentists tell their patients to rinse their mouths with Dioxogen before and after treatment. Some of them recommend that their patients use Dioxogen regularly at home to keep their mouths prophylactic.

This practice is in line with the modern tendency of the dental and medical professions to teach prevention as well as to cure wrong conditions.

THE OAKLAND CHEMICAL CO.

59 FOURTH AVENUE NEW YORK, N. Y.

Your Dealer Sells Ney Golds

Ney-Oro B

$1.60 per dwt.

NEY tested gold alloy 1812

Its color and lustre please patients when a slight display of gold is unavoidable. Its magnificent casting qualities delight the dentist or technician who uses this alloy. The original specific casting gold for three-quarter crowns.

Ney-Oro B-2

$1.35 per dwt.

A combination of Ney-Oro B in modern fixed bridge construction, that harmonizes perfectly in color while its hardness provides ample protection for incisal or occlusal edges.

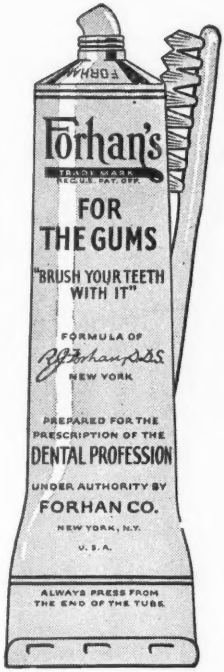
THE J. M. NEY COMPANY

71 Elm Street HARTFORD

55 E. Washington St. CHICAGO

To Arouse Public Apathy

Preventive dentistry has its place in life. It is indispensable to the preservation of good health. Dentists know this but they must remain silent. The ethics of the profession compel it. So to arouse public appreciation of the value of dental skill and the importance of daily care the Forhan Company, maker of Forhan's for the Gums, Forhan's Pyorrhea Liquid and Forhan's Antiseptic, is selling preventive dentistry to the public in a powerful series of newspaper and magazine advertisements.



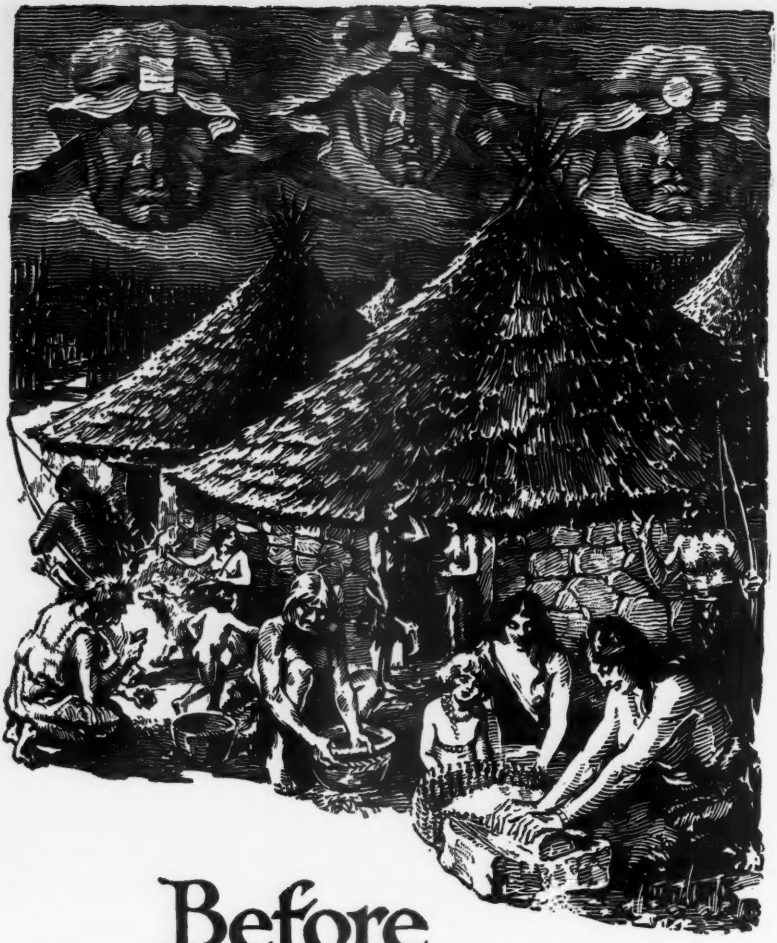
Formula of R. J. Forhan, D.D.S.

Forhan Company, New York
Forhan's Ltd., Montreal

Your Teeth Are Only As Healthy As Your Gums

Forhan's Pyorrhea Astringent is a recognized healing adjunct in the successful treatment of Pyorrhetic conditions. Its use is restricted solely to dentists.

Forhan's
FOR THE GUMS



Before History began—

face and tooth forms were established

If we but realize that known facts existed ages before they were discovered, we experience a growing respect for antiquity. The blood of man had circulated in the selfsame way for thousands of years, but it was the seventeenth century before Harvey discovered the course of the human blood stream.

Human teeth (as well as the teeth of man-like apes) have been Square, Tapering and Ovoid for countless years, yet these forms were never recognized or classified as such until 1911, when Dr. Williams demonstrated their existence and revealed the principle of harmony between face form and tooth form.

Trubyte

—they follow Nature's Age-old Plan

If you could "personalize" the dominant characteristics of the teeth of all time, there would appear out of the past three figures bearing on their brows the Symbols of Form.

If you could visualize the dominant face forms of all time, you would see the "ancestors" of every Square, Tapering and Ovoid face in the world.

If you can once realize fully the significance of the foregoing facts, you will have grasped something of the value of the discoveries embodied in the Trubyte System of Artificial Teeth. You will see that in Trubyte Teeth you have the results of original research and you have the advantage of knowing that the Trubyte Idea is right in principle, and, therefore, adaptable to many methods.

If you once make the Trubyte Idea your own, it will unfold potentialities of great importance to you as a dental practitioner.

RESTORATIONS THAT RESTORE

The DENTISTS' SUPPLY COMPANY of NEW YORK

Doctor:

How do you match those pink tints in your patients' teeth?

ONE of the most difficult problems in connection with Synthetic Porcelain was to develop a pink porcelain pigment. Other manufacturers have tried to make a pink shade but they have used pigments, like vermilion, which bleach out or discolor badly. The Caulk Research Laboratories developed a pink porcelain pigment for Synthetic Porcelain Shade No. 11, a very necessary shade because many teeth show decided traces of pink. At this time other manufacturers of silicates do not make a pink shade or else the pink shade is a colored pigment not resistant to chemical change. Synthetic Porcelain is the only product now sold in which a pink porcelain pigment is used and it is all produced in the Caulk Dental laboratories at Milford.

"That Synthetic Porcelain Smile"

CAULK

Use Lavoris In Your Prophylaxis

Obviously an agent that enhances the natural resistance of normal mucous membranes is an invaluable ally in prophylactic work. In addition to your regular prophylactic treatments, prescribe the home use of Lavoris and watch the results. Its pleasing color and attractive flavor are of great assistance in assuring the patient's full co-operation. Lavoris Chemical Company, Minneapolis, Minn. . . . Toronto, Ont.

LAVORIS

Formula

Active Ingredients
in Grams Per Liter

Zinc Chloride	2.191
Menthol	0.382
Ol. Cinnam	1.486
Formalin	0.431
Saccharin	0.361
Ol. Caryoph	0.297
Alcohol	3%

In order to protect Lavoris and those who use it against inferior imitations, Lavoris is put out in sealed cartons only and in three sizes.

THE SILENT SALESMAN
Every American Cabinet is a silent, tactful salesman. By the psychological effect of its beauty and professional appearance, upon the dentist's clientele, it impresses them with his judgment, skill and professional success.
American Console Dental Cabinet No. 150 is shown above in white Duco, with black vitrolite working surface, black glass knobs and black striping. Also furnished in Cadet Blue, Neptune Green, Mother of Pearl Gray, and Black Duco.
THE AMERICAN CABINET CO.
TWO RIVERS, WIS.

NOTE—We are now prepared to supply cabinet bases in the new material "Formica," in Verde Antique pattern, at the same price as marble.

THE AMERICAN CABINET CO., Two Rivers, Wis.

Please send me catalog No. 19-A.

Name_____

Address_____

City_____ State_____

"Please..Please.. give us a chance"

So MIGHT cry children's teeth and gums, if they could but talk. Many parents fail to realize that even though their children's teeth are perfect when formed, the hasty consumption of soft foods, washed down with milk or water, often leads to unsatisfactory dental conditions.

Analysis of Grape-Nuts

Moisture	2.1%
Ash	2.7%
Protein	12. 3%
Fat (ether extract)	0.7%
Fiber	2.0%
Carbohydrates (other than fiber)	80.2%
(Maltose 13.5%)	
Calories per ounce	105

Parents should learn the truth of the adage—"Teeth must *work* to live." And when you explain to them the necessity for giving teeth a chance to develop naturally—remember Grape-Nuts.

Children enjoy the crispness of Grape-Nuts. And Grape-Nuts gives their teeth and gums a chance to chew thoroughly, and thus get the essential natural exercise.

Eaten with whole milk, or cream, Grape-Nuts supplies to the body a well-balanced ration that not only helps to protect sound teeth, but body health in general. Grape-Nuts supplies phosphorus, proteins, iron, carbohydrates, and the essential vitamin-B, a builder of the appetite.

The many desirable qualities of Grape-Nuts make it an excellent food for inclusion in the child's diet.

May we send you a special gift package containing a sample package of Grape-Nuts, together with samples of other Post Food Products—which include Instant Postum, Post Toasties and Post's Bran Flakes? We shall be glad to send this gift package upon request.

POSTUM COMPANY, INC., Dept. G.-D. 12, Battle Creek, Mich.

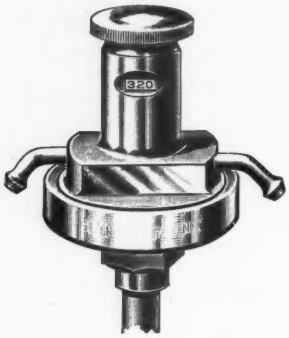
If you live in Canada, address Canadian Postum Company, Ltd., Dept. G.-D. 12, The Sterling Tower, Toronto 2, Ont.

Post Food Products

© 1929, G. F. Corp.

SNOW'S
INDEX GAS REGULATOR

Patented October 31st, December 19th, 1893



THIS Regulator was the first one made which combined in a convenient form *all* the desirable requisites for a Gas Regulator for a Dental Vulcanizer.

Its sensitiveness makes it the best regulator for any of the plastic materials as well as rubber vulcanizing and Hecolite pressing.

Both nozzles for the attachment of Rubber tubing are horizontal with drooping ends, and it is impossible for the tubing to fall over and collapse, impeding the flow of gas.

Manufactured only by

THE SNOW DENTAL COMPANY

BUFFALO, N. Y., U. S. A.

PRICES QUOTED ON APPLICATION

Made in U. S. A.

Oral Prophylaxis and the Radio

How the Pepsodent Company is using America's most popular radio feature to carry dental education to the millions

ON August 19th the Pepsodent Company began a year's series of broadcasts which take place every night in the week except Sunday. The feature is the blackface lives of radio's premier character artists, Amos 'n' Andy.

We hope that you and your family may find it as humorous and as entertaining as the many we have talked to. The station nearest you, and the time, are given below.

There is a serious side to this program, too, which has for its message the idea of oral prophylaxis. Each program, you will note, ends with the line: *Use Pepsodent twice a day, see your dentist at least twice each year.* It is our hope that the profession may benefit by this broadcast as well as Pepsodent.

Every evening (except Sunday)—7 p. m. Eastern Time; 10:30 p. m. Central Time; 9:30 p. m. Mountain Time; 8:30 p. m. Pacific Time—through the following cities of the National Broadcasting Chain:

New York	Rochester	St. Louis	Milwaukee
Boston	Pittsburgh	Kansas City	Superior, Wis.
Springfield, Mass.	Detroit	St. Paul	Denver
Washington, D. C.	Chicago	Minneapolis	Salt Lake City

An Alkaline Medium is Unfavorable to Bacterial Growth

Ely (J.A.M.A. 1918, LXXI, p. 1431) states that when the system is saturated with alkalies there is unfavorable soil for bacterial growth and, in consequence, a higher degree of resistance to infection.

The baneful mouth acids—the predisposing cause of dental decay—may be neutralized and very harmful effects destroyed by the use of a harmless antacid — Phillips Milk of Magnesia — which seems to act like a specific in these conditions.

Phillips Milk of Magnesia not only acts locally in the mouth, but, by reason of its aperient effects, combats any tendency to mouth acidity which may result from excessive acidity of the alimentary canal.

Be sure to specify Phillips Milk of Magnesia because this is the product which has been standard for fifty years with dentists and physicians.

It is a superior form of Milk of Magnesia because it is pure, being free from every trace of deleterious substance. It is a hydrate in colloidal suspension which is responsible for its adhesive properties, its prolonged effect and its special affinity for mouth acids.

Phillips Milk of Magnesia is three times as effective as a saturated solution of bicarbonate of soda and fifty times as powerful as lime water in neutralizing acids.

PHILLIPS Milk of Magnesia

In any course of treatment for combating acidity—the prime cause of dental caries—we recommend the use of Phillips Milk of Magnesia—internally to combat hyperacidity, locally as an alkaline mouth wash—in association with Phillips Dental Magnesia (a compound dentifrice).

CAUTION. The dentist is advised to beware of imitations. Phillips Milk of Magnesia supplied in 4-ounce and 12-ounce bottles. Phillips Dental Magnesia (a compound dentifrice) supplied in 2-ounce collapsible tubes. Obtainable from druggists everywhere.

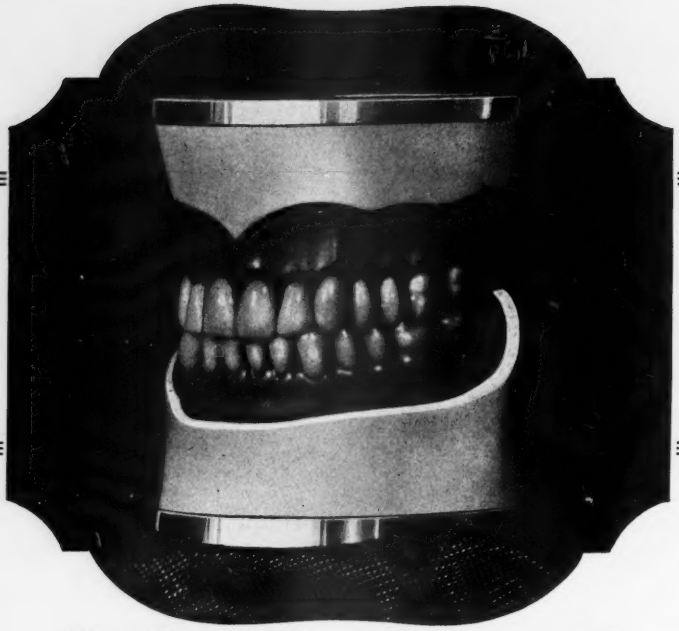
"Milk of Magnesia" has been the U. S. Registered Trade Mark of The Charles H. Phillips Chemical Co. and its predecessor Charles H. Phillips, since 1875.

Prepared only by **The Charles H. Phillips Chemical Co., New York and London**

EVERY COMPLEXION, from aenemic to swarthy, can be correctly matched by one of the three natural and lasting shades in which Improved ITECO is obtainable. The beauty and comfort of Improved ITECO dentures make them the ultimate choice of patients who have experienced the distress and embarrassment often associated with the wearing of uncomfortable, discolored dentures of other materials.

Natural Appearance is assured by the three shades of Improved Iteco

This Improved ITECO denture with full gold palate demonstrates ITECO'S close affinity for metals.



Use the lifelike translucence of

S. S. WHITE "NATURAL" TEETH

in your dentures

The successful construction of a really lifelike denture depends finally upon the porcelain of which the teeth are made. That of "Natural" Teeth differs radically from any artificial tooth porcelain ever produced. It has an extremely fine texture which gives it a susceptibility to the most delicate of color blendings; it registers the finest carvings of the mold—the fine facial markings that serve to diffuse light rays as these lines do in the human teeth.

The incisal edges are thin and accurately defined. Body and enamel are as one and the eye can look deep in a "Natural" Tooth where light and shadow seem to move. The translucent porcelain diffuses the lifelike colors and gives the most vital appearance ever imparted to artificial teeth.

"Natural" Teeth Porcelain may be ground and then easily restored to its original luster.

Comfort and masticating efficiency are assured by the fact that the original patterns of "Natural" Teeth were milled-in on the Wadsworth Articulator. They have a freedom of occlusion, correct cuspal planes, and a lingual surface on the anteriors so natural that it is easy for the patient to become accustomed to the new denture.

S. S. WHITE "NATURAL" TEETH

are practice builders

Square Tapering Ovoid

LAST CALL !

SPECIAL NOVAMPUL OFFER EXPIRES DECEMBER 31, 1929

Send in the Coupon — TODAY!!!

THIS IS FINAL! Get the Novampul Syringe Free with an initial purchase of 200 Novampuls, NOW.

The Novampul is the latest, most convenient method of producing a local anesthesia. Simply break off tip, slip Novampul into the Novampul Syringe, screw down breech and inject.

The needle does not pass through a rubber stopper; hence, no clogging, nor contaminating the solution. No foreign particles enter the solution.

The Novampul Way is the Safe Way.

Thousands of dentists have grasped this special offer and are enthusiastic Novampul users. You, too, can know the convenience, safety and satisfaction of this method, and obtain the Novampul Syringe **Free** by acting NOW!

Our guarantee of complete satisfaction, with the privilege of return for credit, is your protection.

NOVOCOL CHEMICAL MFG. CO., INC.
2921-2923 Atlantic Ave., Brooklyn, N. Y.

I want to take advantage of your offer. Send me the Novampul Syringe and 200 Novampuls (the newest, most efficient anesthesia producing method)—Both for only $15.00.

Charge my Dealer who is .....

Dr. .....

Address .....

City and State .....

**Novampul Syringe is supplied Free of Charge on Initial Orders only.*

142

143

144

145

146

Showing the graded sizes in one square form. There are four square forms, each form in graded sizes, affording good variety for selection.

Good Cast Work Deserves TRUBRIDGE (TUBE) ANTERIORS

ASK YOUR LABORATORY to use Trubridge (Tube) Anteriors on your cast bridges and partial dentures and give your cast restorations the esthetic quality Trubyte Teeth gave to vulcanite. For Trubridge Anteriors *are* Trubyte Anterior forms adapted to the casting technics.

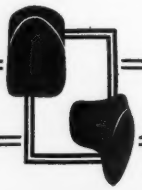
Mechanically, Trubridge Anteriors are far superior to facings. They present the natural lingual tooth form to the tongue—contributing to greater comfort and ease in speaking —and eliminate display of gold, as no incisal tip is necessary.

Bring your cast work up to date. Use Trubridge (Tube) Anteriors.

Your Trubyte Laboratory Now Has Them

THE DENTISTS' SUPPLY COMPANY OF NEW YORK

Note how interdental spaces are eliminated, and note also the natural lingual contour of the tooth.



TRUBRIDGE (TUBE) ANTERIORS

Over

70 YEARS

manufacturing

EXPERIENCE

WITH the purest materials and the most modern machinery it would be impossible without experience to produce satisfactory dental rubbers.

Ash Dental Rubbers have behind them an unparalleled experience of over 70 years. Introduced at the very dawn of the vulcanite era they have set the standard of perfection ever since and are world-renowned for their strength, density, purity and elasticity as well as for their easy-packing qualities.

For completely satisfactory vulcanite work, ask your dealer for

ASH *"trouble-free"* **RUBBERS**

Manufactured in our own factories at Irvington

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A Proven Success—Supplee's

Dentures with "CAST-IN" Wire Clasps

COMBINING WIRE CLASPS and Platinized Gold in a one-piece casting means an unquestioned "Better Denture." Let us construct our "Cast-In" Wire Clasp Denture on your next case. You too will be pleased with the results. It serves two important purposes—

It gives the close fit, strength and adaptation of the one-piece casting; it incorporates the advantages of resiliency and adjustability of wrought wire clasps—fashioned by our skilled "wire benders"—which, through our "Cast-In" technic, become an integral part of the casting.

USE SUPPLEE DENTURSCOPE SERVICE

Submit articulated study models and let us send you a "Denturgraf" designed in actual color for presentation to your patients in our "Denturscope" which reveals design but conceals price and technical data.

A copy of our Brochure "Meeting the Needs of Dentistry" awaits your request.

SAM'L G. SUPPLEE & CO.

17-19 Union Square **New York, N. Y.**

Phones: Algonquin 7470-1-2-3-4-5-6-7 Night Phone—Susquehanna 4500

"They increase my income a full $1000.00 a year."
PHILADELPHIA DENTIST
THINK IT OVER
Upper or Lower $2.00 per box (½ Dozen)
EUREKA SUCTION COMPANY
Loudonville, Ohio, U. S. A.

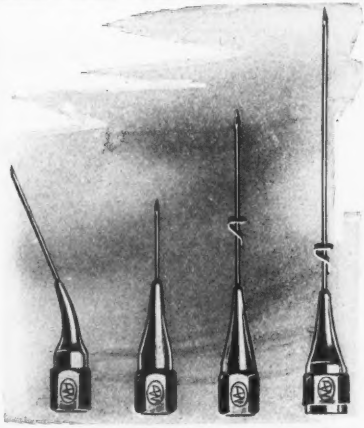
SAL HEPATICA

As a general laxative and eliminant, Sal Hepatica materially aids local treatment in pyorrhea, spongy gums and many other pathologic oral diseases.

Samples supplied for clinical purposes

BRISTOL-MYERS COMPANY
40 RECTOR STREET, NEW YORK

Every AW 30% Iridium Platinum Hypo Needle combines the science of the metallurgist with the precision of the expert mechanic, to give to the dentist a lasting, dependable and safer instrument.



They are made in all lengths, gauges and styles to fit securely and correctly on your favorite syringe.

Ask your dealer or write for folder D.

THE AMERICAN PLATINUM WORKS
N. J. R. R. Ave., at Oliver St., Newark, N. J.

HERAKLES

"HERAKLES" RUBBER MAKES HERCULEAN PLATES

DENTAL RUBBER

The dentist himself is the best judge of the condition of his plate-wearing patient's mouth tissues. If he finds them delicate and sensitive, he should employ "Herakles" Rubber for the denture. "Herakles" is of a yellow color, turning to olive doré after vulcanization. Red rubbers contain vermilion—a mercury derivative. And there are many practitioners who claim that mercury often causes a sore, inflammatory condition of the mouth. Two shades—regular and a new lighter shade—both stocked by your dental dealer.

NOW MADE IN THE NEW LIGHT SHADE

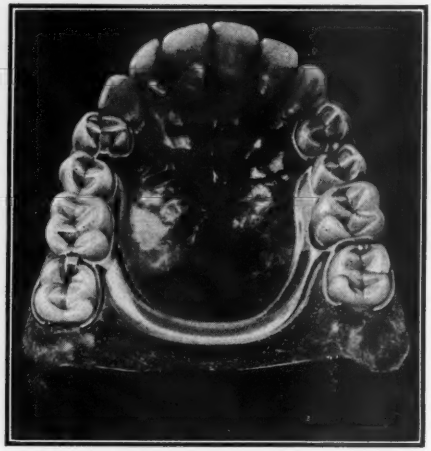
PRICES:
$5.00 per pound $2.50 per half pound
1/5 lb. sample box $1.00

Buy from your dealer

Atlantic Rubber Mfg. Corporation
Successors to Traun Rubber Company
239-243 Fourth Avenue Dept. 13-29012 New York

Dept. 13-29012
Enclosed $1.00 for Sample Box of "Herakles"
Dr._____

AN INTERESTING TRUBRIDGE CASE



This cast gold partial denture using Trubridge (Tube) Teeth with concealed posts was designed and constructed in the laboratories of Geo. A. Wiechert Co., 247 West 42nd Street, New York.

THIS TRUBRIDGE DENTURE is particularly interesting because it presents the latest development in tube teeth—Trubridge Teeth with concealed post holes. Note how the absence of the usual hole presents an unbroken, finely carved occlusal surface and permits articulating the teeth unhampered by a gold post.

The leading laboratories everywhere are today standardizing on TRUBRIDGE (Tube) TEETH for their fine castings because they are most suitable for the exacting standards of modern articulation. Trubridge (Tube) Teeth are adaptable to mechanical requirements with less grinding and will make real comfort and efficiency in mastication possible.

Trubridge Anteriors, presenting the famous Trubyte Anterior Forms adapted for casting, are now available. Ask your laboratory or write for literature.

Any comparisons emphasize the Superiority of Trubridge (Tube) Teeth

THE DENTISTS' SUPPLY COMPANY OF NEW YORK

JUSTI TEETH have given satisfaction for sixty-five years.

JUSTI PORCELAIN is unexcelled for strength and popularity of shades.

JUSTI MOLDS, as presented in the Ekloform and Pinoro lines, are in keeping with the most exacting requirements of prosthodontists.

Add to this the Justi policy of investigating the merits of new tooth forms — such as Hall's Inverted Cusp Posteriors and Sears' Channel Posteriors—and being the only manufacturer to offer them to the profession—

Then you have some good reasons for becoming a Justi customer.

H. D. JUSTI & SON

32nd & SPRING GARDEN

PHILADELPHIA

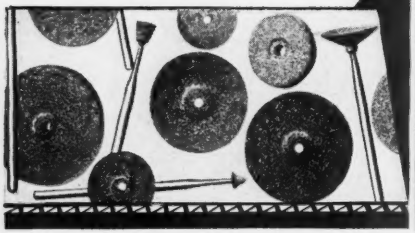
Ask for S. S. White

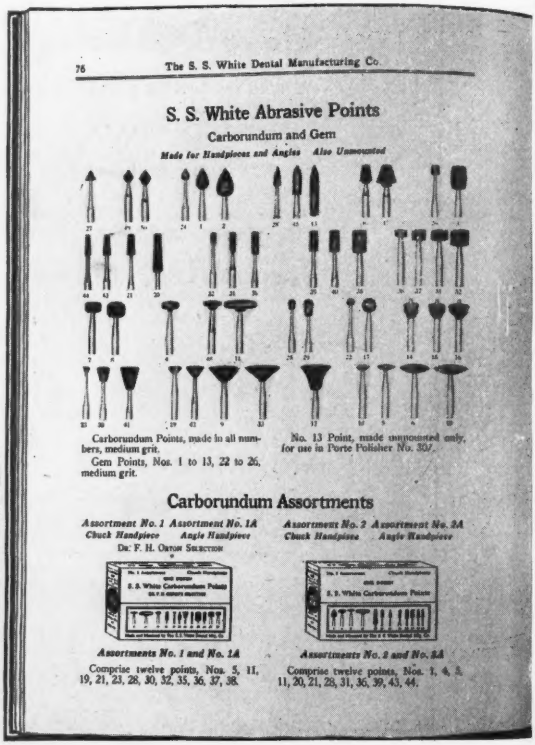
A moment's thought on abrasives will repay you in many ways. A good carborundum tool can save time for you; it can assist you to do better work. More important still, it can sustain your reputation as a gentle operator in the mind of the patient.

S. S. White Carborundum Points have made a distinct impression upon dentists who give any thought whatever to good cavity preparation and upon those who realize that careful mounting of their carborundum tools is an asset of no mean value. It's easy to tell when a carborundum tool is running true by the kind

S.S.White Carborundum

Points Wheels Disks





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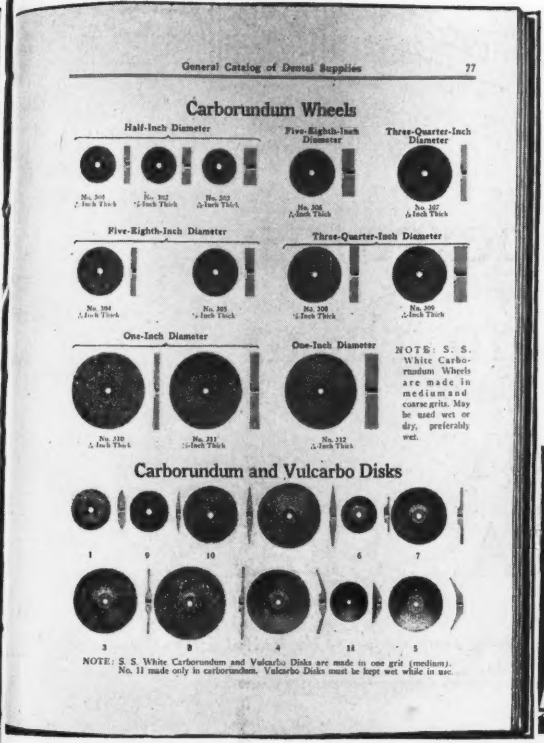

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Three-Quarter-Inch Diameter

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One-Inch Diameter

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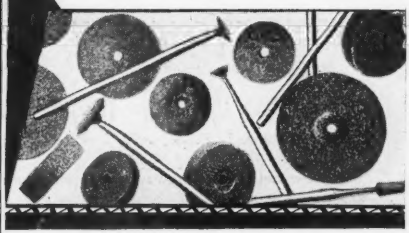

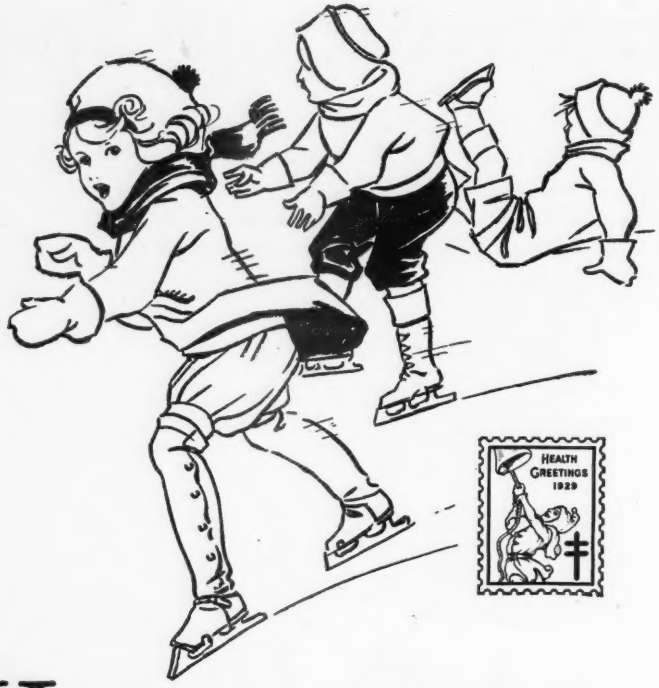

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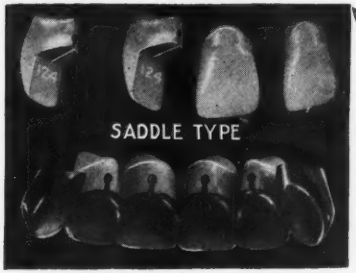

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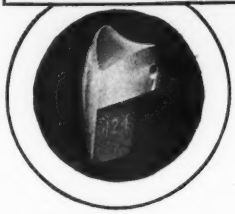

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